GHISS 16, 24, 32, 40, 48, 56 R AP

GHISS 16, 24, 32, 40, 48, 56 R AE

GHISS 16, 24, 32, R AP PV

GHISS 16, 24, 32, R AE PV

GHISS 16, 24, 32, 40, B AP

GHISS 16, 24, 32, 40, B AE

GHISS 16, 24, 32, B AP PV

GHISS 16, 24, 32, B AE PV

Unical®

USER'S MANUAL AND
OPERATING INSTRUCTIONS

STANDARD GAS DEVICE WITH CAST-IRON SEGMENTED HEAT-EXCHANGER, WITH DIRECT SPARK IGNITION (AE), AND PIEZO IGNITION (AP)

SUITABILITY

GHISS R ..., and GHISS B... boilers have been certified according to the following European standards:

- 90/396/CEE gas directive
- 92/42/CEE degree of efficiency directive
- 89/336/CEE electromagnetic suitability directive
- 73/23/CEE low voltage directive

DEVICES

Type	Ignition	Heating pump	Start-up container
GHISS ... R AP	piezo	-	-
GHISS ... R AE	ionisation	-	-
GHISS ... R AP PV	piezo	in place	-
GHISS ... R AE PV	ionisation	in place	-
GHISS ... B AP	piezo	-	in place
GHISS ... B AE	ionisation	-	in place
GHISS ... B AP PV	piezo	in place	in place
GHISS ... B AE PV	ionisation	in place	in place

Dear Customer,

Thank you for purchasing the gas boiler of Unical. Thus you have become the owner of a high technical quality device operating economically and safely.
Congratulations!

Please check the completeness and intactness of the product!

Do not remove and do not damage the labels found on the device!

This document is the operating and maintenance instructions. The guarantee slip found in the attachment must be stamped upon purchase and commissioning and must be filled in legibly!

Please, in your own interest, read the information we presented on the following pages carefully, and keep it because you will need it later too.

If you take our advice, our product will serve you reliably for long years to come.

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The operating instructions contain the following symbols:

Warning = this operation requires greater attention!

Prohibition = this operation must not be carried out!

IMPORTANT DETAILS TO KNOW

After you have unwrapped the device, check the intact and complete status of the product.

Upon planning and execution, the requirements of the valid gas service provider, the construction, environmental and related electric standards as well as the other related standards must be taken into account and followed to the fullest.

The producer cannot take responsibility for unprofessional operation and other external mechanical damage that does not originate from unprofessional operation.

In the event of an error, if you cannot eliminate the error on the basis of the instructions of the operating manual, call the designated brand service.

Check the pressure of the heating system at regular intervals to prevent its decrease below 1 bar.

If the device switches off interlocking on several occasions, repeatedly, call the brand service; until then the following is to be executed:

- Turn off the main switch of the device
- (cutting off electricity).
- Close the connecting gas and water connection.
- In the case of frost danger, drain the heating and cold-and-hot-water circles (draining).

In the interest of the safe and economical operation of the device, it is practical to have the inspection recommended by the manufacturer and the necessary maintenance work executed by the designated brand service at least once a year.

The present operating instructions contains all the important information in connection with the use of the device for the user, therefore, it is practical to keep it close to the boiler. If the device is sold or relocated, it should always be accompanied by the operating instructions so that the new owner and/or repairman could get sufficient information.

BASIC RULES OF SAFETY

The user is to pay attention to the fact that this device uses gas, electric energy and water during its operation, which poses some basic rules of safety:

- The boiler must not be used by children or individuals not trained for its operation.
- Do not use electric devices, machines, equipment, and do not switch on the lights if you can smell gas. In this case, close the gas tap, air the room and call the brand service.
- Do not touch the boiler with wet hands if you are in your bare feet.
- Do not clean the boiler while it is turned on and is going.
- Safety and other parts can be replaced in the device only by the authorised brand service, only with original parts identical with that of the manufacturer.
- Do not pull or twist the connecting cable of the boiler as long as it is live.
- The operation of the device requires air supply, therefore, do not cover or close off or narrow down the ventilation openings or windows that provide the replacement of the air required for burning.
- For the fear of frost danger, do not install the boiler in an open room.
- Do not store packaging materials in the vicinity of the boiler (cardboard paper, plastic or wood), or inflammable or explosive materials.

GENERAL INTRODUCTION

GHISS R is the basic type atmospheric furnace-chamber hot water boiler with cast iron, segmented heat-exchanger. It is suitable for the execution of the **pump-system** central heating system of residential and public buildings and, together with the indirectly heated hot water containers installed next to them, the execution of the provision of hot water for use. The "**PV**" types of the boiler have built-in circulation pumps, closed expansion tank, and safety blow-off valves.

GHISS B device is an atmospheric furnace-chamber hot water gas boiler with a cast-iron, segmented heat-exchanger, built together with a combined-execution, 100-litre, indirectly heated hot water container. It is suitable for the execution of the **pump-system** central heating system of residential and public buildings and the execution of the provision of hot water for use.

This boiler, in the building and hot water container heating functions operates with two separate heating pumps, working in alternate phases.

Its execution, upon demand, can be: **PV** built together with circulation pump on building-heating side, automatic de-airing valve, closed expansion tank, and safety blow-off valve, or the version without those, made for already existing heating systems**.**

Its hot water container has an absolutely hygienic water-space provided with double enamel coating and high-output magnesium anode protection. For protection against over-pressure originating from the expansion of hot water for use, a safety valve is installed holding back 6 bars.

For the circulation of hot water for use, the device is equipped with a separate circulation pipe connection.

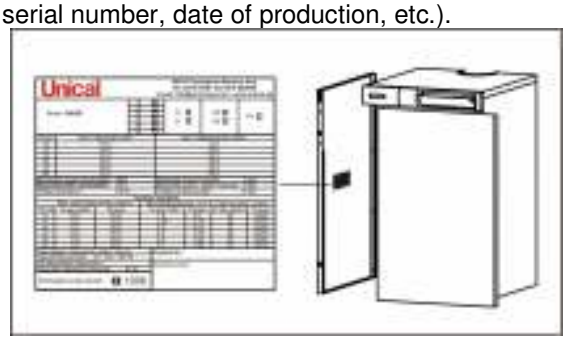
Both families of devices can be operated with piped natural gas ("H" or "S") and tanked PROPANE-BUTANE gas (**II2H,S3B/P**).

Type of combustion product conduction: **B11BS**

IDENTIFICATION

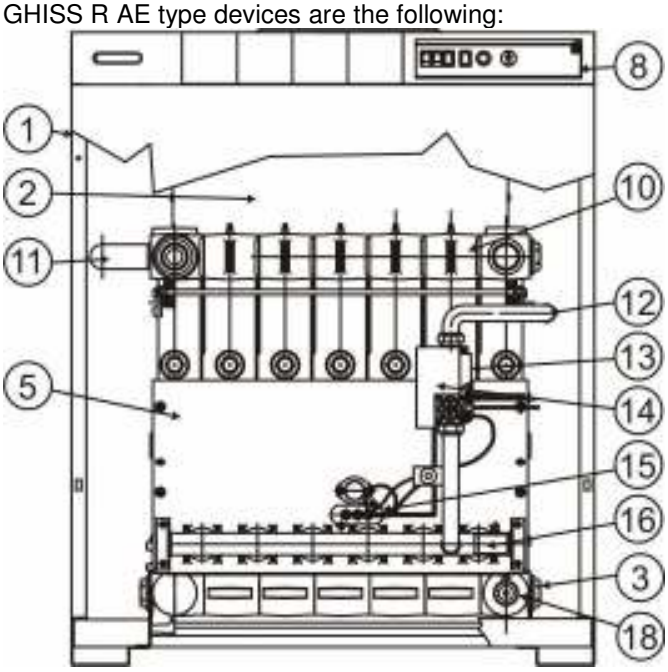
The data sheet serving the identification of the boiler can be found on the inside wall of the left side housing, after the removal of the door of the device.

⚠ No not remove the data plate and do not damage it! This data plate contains the main parameters of the device and the individual identification features (type, serial number, date of production, etc.).

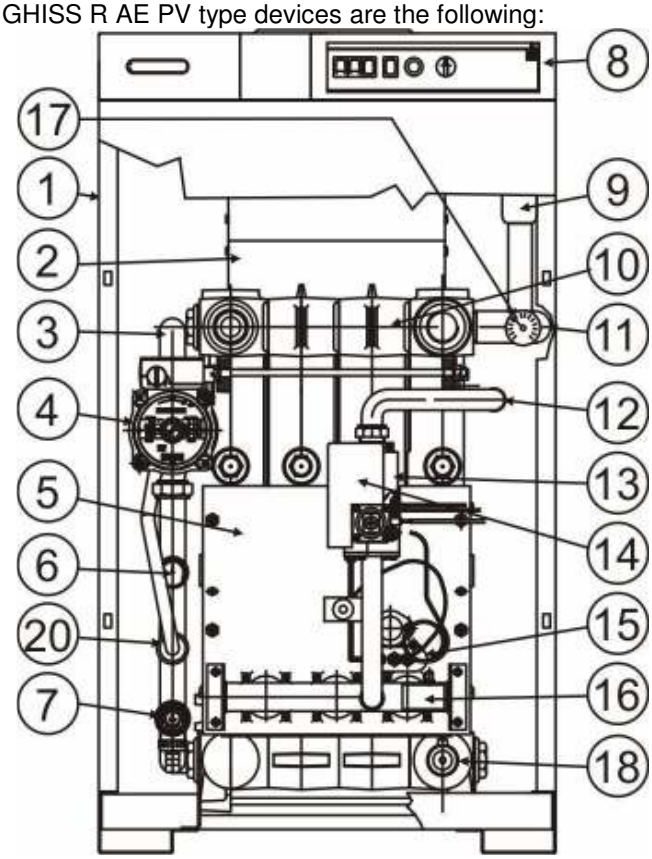


CONSTRUCTION

The construction and main parts of GHISS R AP and GHISS R AE type devices are the following:



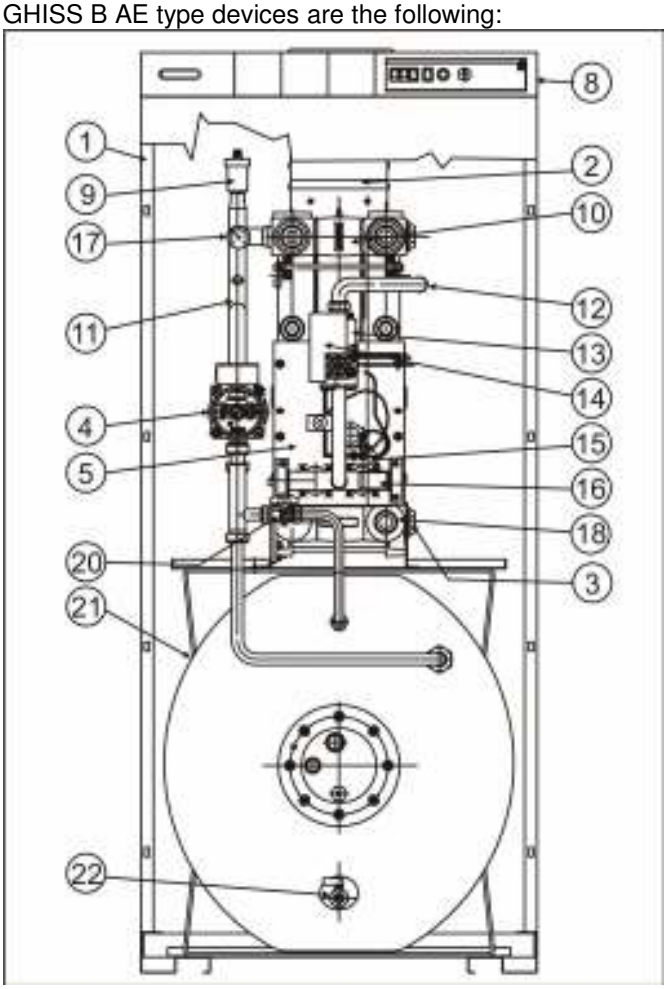
The construction and main parts of GHISS R AP PV and GHISS R AE PV type devices are the following:



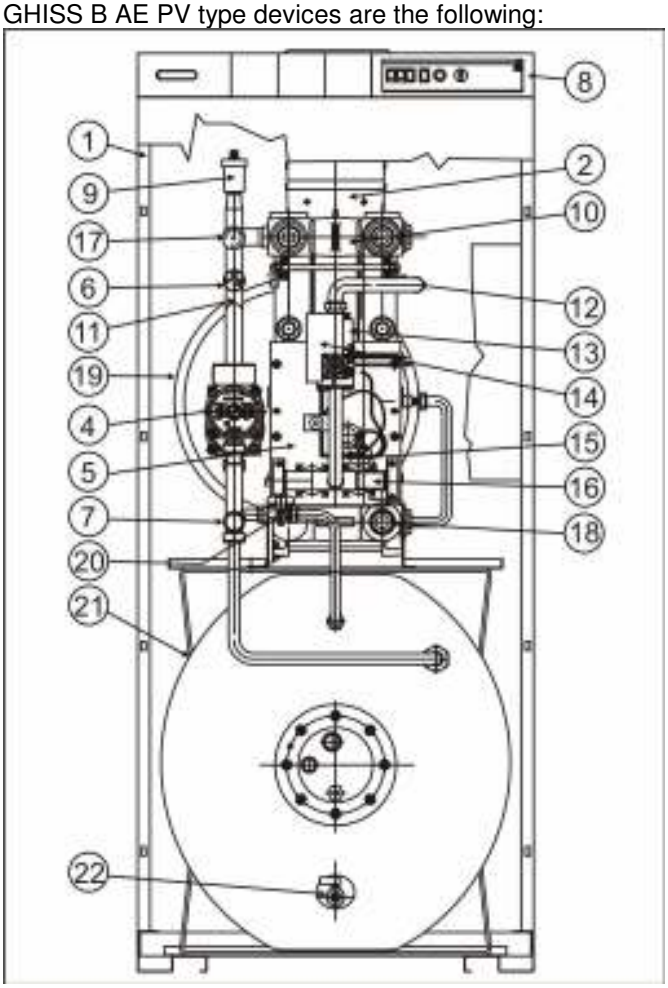
Part list:

1. Boiler housing
2. Deflector
3. Return pipe
4. Circulation pump
5. Burner tray
6. Pressure switch
7. Safety valve
8. Electric control cabinet
9. Automatic de-aerator
10. Cast heat-exchanger
11. Forward pipe
12. Gas pipe
13. Gas valve
14. Ignition controller – only on AE type
15. Ignition electrode
16. Nozzle holding collector
17. Pressure meter
18. Draining tap
19. Expansion tank
20. Filling tap
21. 100-l tank
22. Hot water for use draining tap

The construction and main parts of GHISS B AP and GHISS B AE type devices are the following:



The construction and main parts of GHISS B AP PV és GHISS B AE PV type devices are the following:



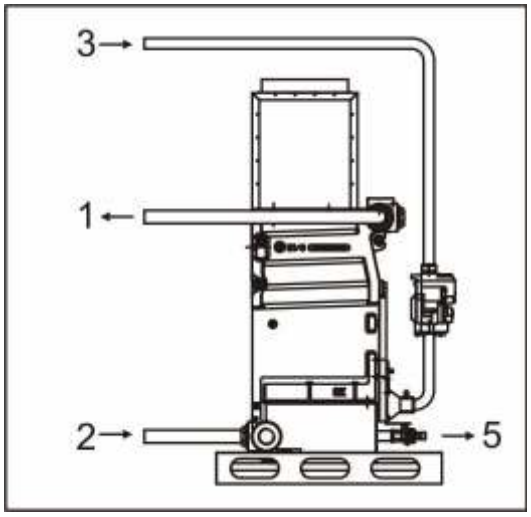
TECHNICAL DATA

UNICAL GHISS R	Unit of measurement	16 AP, -AE 16 AP,-AE,-PV	24 AP, -AE 24 AP,-AE,-PV	32 AP, -AE 32 AP,-AE,-PV	40 AP, -AE	48 AP, -AE	56 AP, -AE
Technical data							
Nominal heat load	kW	16	24	32	40.5	48.9	57.4
Nominal heat output	kW	14	22	29.3	36.8	44.4	52
Nominal degree of efficiency (water-side)	%	90.5	91	90.9	90.8	90.7	90.6
Distinction of degree of efficiency		**					
Min. –max. operating water temperature	°C	45/85					
Water cubic capacity of the boiler	dm^3	5.5	7	8.6	10.2	11.8	13.4
Number of burners / main nozzles (v)	Db	2	3	4	5	6	7
Number of cast segments (v+1)	Db	3	4	5	6	7	8
Heatable cubic capacity	lgm^3	300-350	350-450	450-550	600-700	700-800	800-900
Maximum operating overpressure	bar	3 (2^{nd} pressure class)					
Boiler body test overpressure	bar	6					
Pressure loss (80/60 °C)	mbar	0.6	0.5	0.4	0.3	0.2	0.1
Expansion tank cubic capacity (NB)	l	10	10	10	-	-	-
Expansion tank pre-tensioning pressure	bar	1	1	1	-	-	-
Connecting sizes							
Forward and return heating water	coll	1					
Gas connection	coll	¾					
Gas-technical data		**Classification according to gas used: $II_{2H,S3B/P}$**					
Piped natural gas							
Connecting gas pressure	mbar	25					
Burner nozzle pressure “H”	mbar	12.8	12.5	11.6	12	11.5	11.5
Burner nozzle pressure “S”	mbar	14.5	13.5	12.5	13	12.5	13
Burner nozzle diameter “H”	Ø/mm	2.35	2.35	2.35	2.35	2.45	2.45
Burner nozzle diameter “S”	Ø/mm	2.6	2.6	2.6	2.6	2.6	2.7
Amount of fuel “H”	M^3/h	1.6	2.5	3.4	4.3	5.2	6.1
Amount of fuel “S”	M^3/h	2.0	2.9	3.9	5.0	6.0	7.1
Tanked PB-gas							
Connecting gas pressure	mbar	28-30					
Burner nozzle pressure	mbar	25.9	25.9	22.0	24.1	24.5	24.0
Burner nozzle diameter	Ø/mm	1.45	1.45	1.6	1.6	1.6	1.6
Amount of fuel	m^3/h	1.1	1.8	2.5	3.1	3.7	4.4
Combustion product data		**Classification according to the conduct of combustion products: B_{11BS}**					
Combustion product conduct	Ø	130	130	130	150	180	180
Combustion product temperature	°C	100	110	120	130	140	150
Chimney draft demand	mbar	0.1					
Combustion product mass flow	m^3/h	38.1	55.8	72.3	87.9	102.7	115
NOx –class		**2. (NO_x – concentration < 200 mg /kWh)**					
Electric data							
Electric connection	V/Hz	230/50					
Electric output	W	14-107	14-107	14-107	14	14	14
Electric protection		IP 20					
Shock-protection class		I.					
Pilot light protection		Ionisation					
Ignition	Hz / kV	16/16 electric spark					
Noise level	dB	max.50					
Quality certification	CE	CE 1009					
Enveloping sizes							
Height	mm	860					
Width	mm	410	485	560	635	710	785
Depth	mm	610					
Boiler volume (without water)	kg	92	106	120	134	145	160

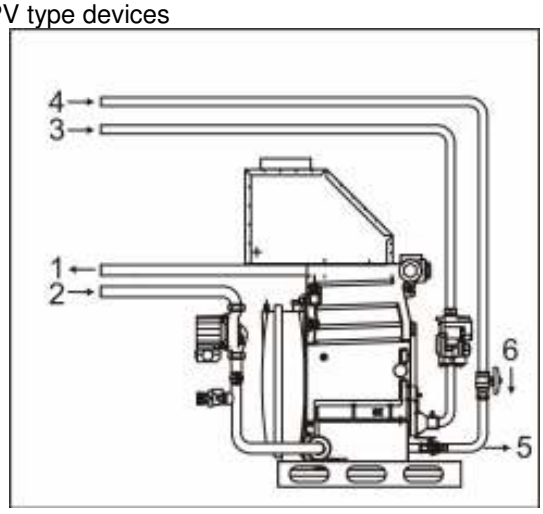
UNICAL GHISS B	Unit of measure ment	16 AP, -AE 16 AP,-AE,-PV	24 AP, -AE 24 AP,-AE,-PV	32 AP, -AE 32 AP,-AE,-PV	40 AP, -AE
Technical data					
Nominal heat load	kW	16	24	32	40.5
Nominal heat output	kW	14	22	29.3	36.8
Nominal degree of efficiency (water-side)	%	90.5	91	90.9	90.8
Distinction of degree of efficiency		✱✱			
Min. –max. operating water temperature	°C	45/85			
Water cubic capacity of the boiler	dm^3	5.5	7	8.6	10.2
Number of burners / main nozzles (v)	db	2	3	4	5
Number of cast segments (v+1)	db	3	4	5	6
Heatable cubic capacity	lgm^3	300-350	350-450	450-550	600-700
Maximum operating overpressure	bar	3 (2^{nd} pressure class)			
Boiler body test overpressure	bar	6			
Pressure loss (80/60 °C)	mbar	0.6	0.5	0.4	0.3
Expansion tank cubic capacity (NB)	l	10	10	10	
Expansion tank pre-tensioning pressure	bar	1	1	1	
Connecting sizes					
Forward and return heating water	coll	1			
Gas connection	coll	¾			
Cold-hot water connection	coll	½			
Data of hot water for use					
Nominal heat output	kW	27	27	27	27
Container cubic capacity	l	100	100	100	100
Maximum operating water temperature	°C	60	60	60	60
Permanent water-transport at 45°C (Δt=30°C)	l	7.5	11	11	12
Container max. operating water pressure	bar	6	6	6	6
Container test overpressure	bar	10	10	10	10
Gas-technical data		**Classification according to gas used: II2H,S3B/P**			
Piped natural gas					
Connecting gas pressure	mbar	25			
Burner nozzle pressure “H”	mbar	12.8	12.5	11.6	12
Burner nozzle pressure “S”	mbar	14.5	13.5	12.5	13
Burner nozzle diameter “H”	Ø/mm	2.35	2.35	2.35	2.35
Burner nozzle diameter “S”	Ø/mm	2.6	2.6	2.6	2.6
Amount of fuel “H”	m^3/h	1.6	2.5	3.4	4.3
Amount of fuel “S”	m^3/h	2.0	2.9	3.9	5.0
Tanked PB-gas					
Connecting gas pressure	mbar	28-30			
Burner nozzle pressure	mbar	25.9	25.9	22.0	24.1
Burner nozzle diameter	Ø/mm	1.45	1.45	1.6	1.6
Amount of fuel	m^3/h	1.1	1.8	2.5	3.1
Combustion product data		**Classification according to the conduct of combustion products: B11BS**			
Combustion product conduct	Ø	130	130	130	150
Combustion product temperature	°C	100	110	120	130
Chimney draft demand	mbar	0.1			
Combustion product mass flow	m3/h	38.1	55.8	72.3	87.9
NOx –class		2. (NOx – concentration < 200 mg /kWh)			
Electric data					
Electric connection	V/Hz	230/50			
Electric output	W	107 / 200	107 / 200	107 / 200	107
Electric protection		IP 20			
Shock-protection class		I.			
Pilot light protection		Ionisation			
Ignition	Hz/ kV	16/16 electric spark			
Noise level	dB	max.50			
Quality certification	CE	CE 1009			
Enveloping sizes					
Height	mm	1473			
Width	mm	635	635	635	635
Depth	mm	635			
Boiler volume (without water)	kg	147	160	173	190

HYDRAULIC OPERATION

The hydraulic switching of GHISS R AP and GHISS R AE type devices

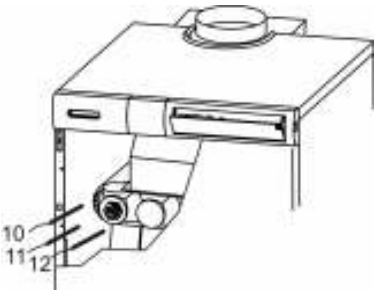


The hydraulic switching of GHISS R AP PV and GHISS R AE PV type devices

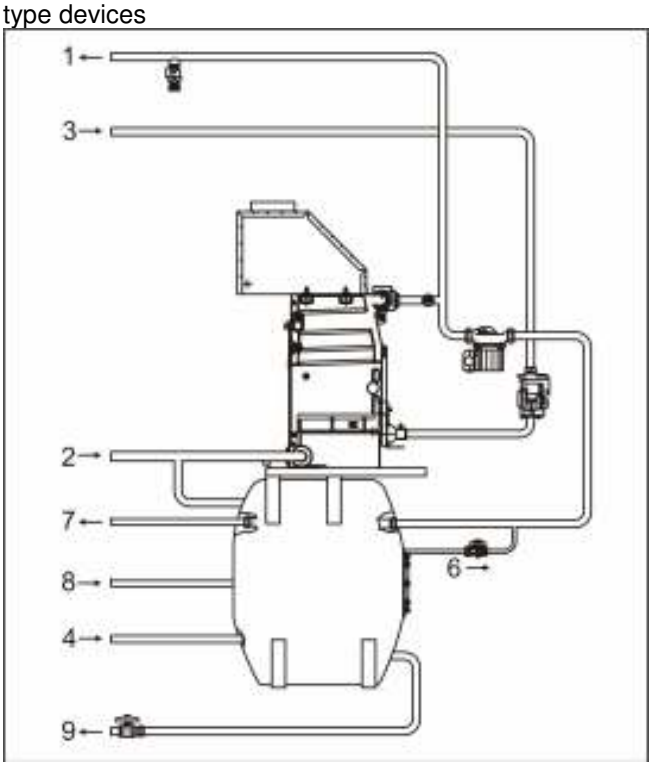


Legends:

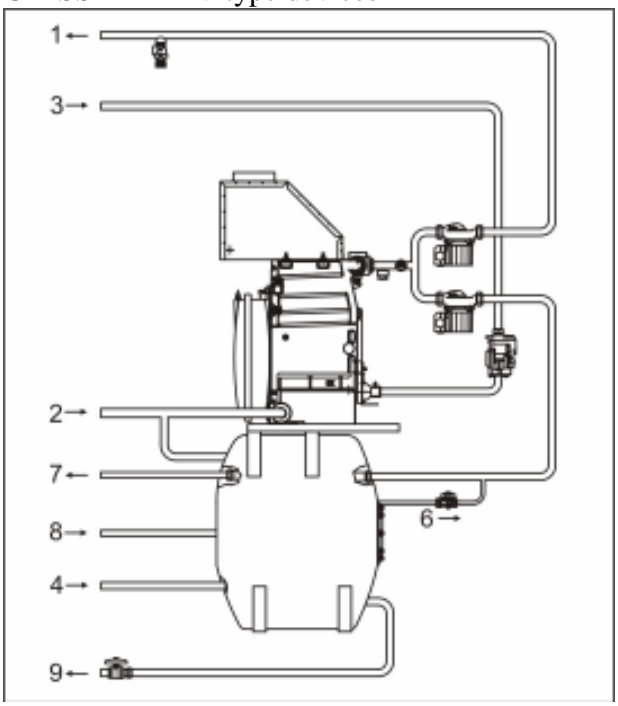
1. Forward
2. Return
3. Gas
4. Network water
5. Draining
6. Filling up
7. Hot water for use
8. Circulation
9. Hot water for use drainage
10. Boiler thermostat
11. Restricting thermostat
12. Thermometer



The hydraulic switching of GHISS B AP and GHISS B AE type devices



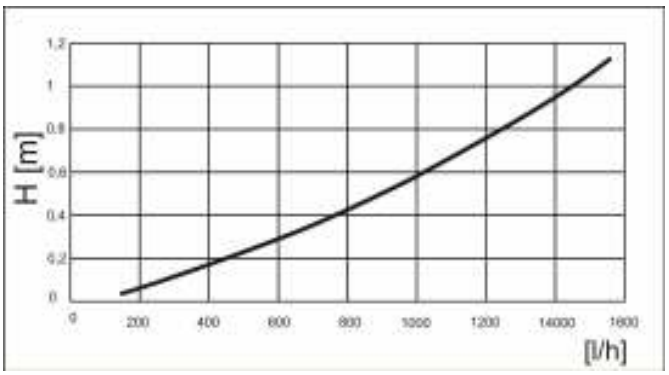
The hydraulic switching of GHISS B AP PV and GHISS B AE PV type devices



PUMP

The character curve of the heating circulation pump built into the GHISS .. . .. PV type devices can be seen in the following illustration.
The pump has III levels; it is always practical to use the lower level that still provides for the heating system; this way you can save electric energy.

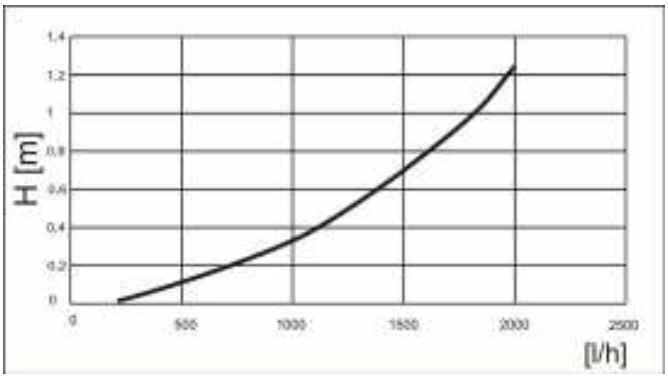
The pressure-loss of PV-type boilers:

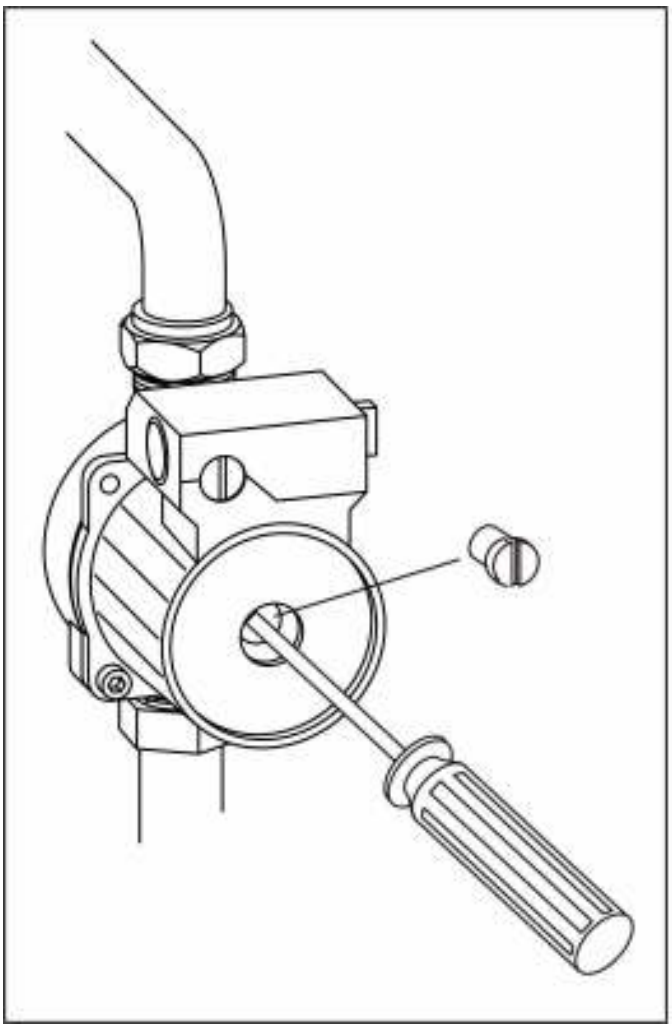


Upon the first start-up of the boiler and after a longer shut-down, it is practical to check the turnability of the axle of the pump with the help of a screwdriver.

It is forbidden to operate the pump without water!

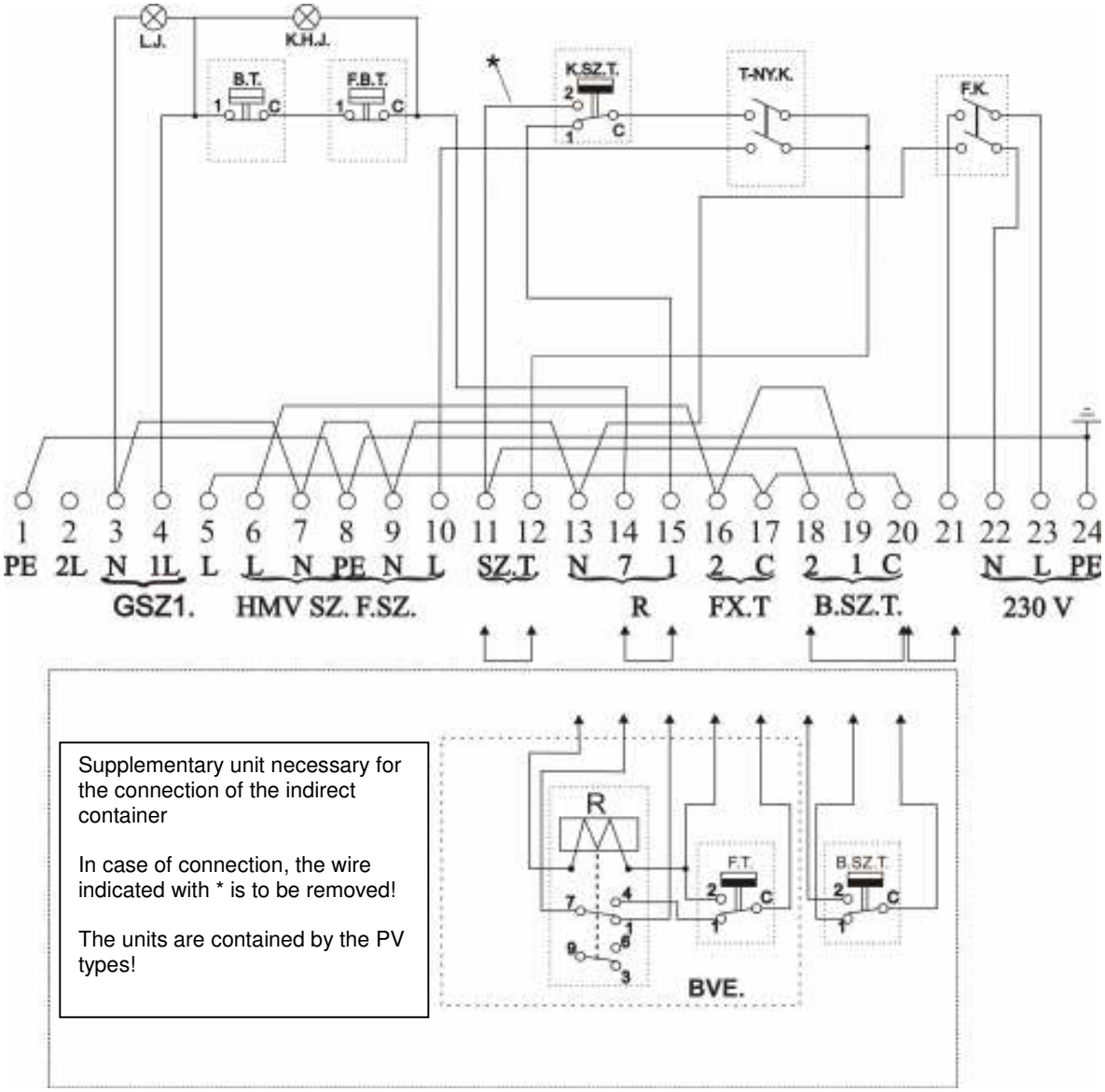
The hydraulic loss of the boilers
With the exception of the GHISS .. . .. PV type devices, there is no heating circulation pump in the device. This is to be provided for in the heating system. For sizing, use the following graph.





ELECTRIC CONNECTION DIAGRAMS

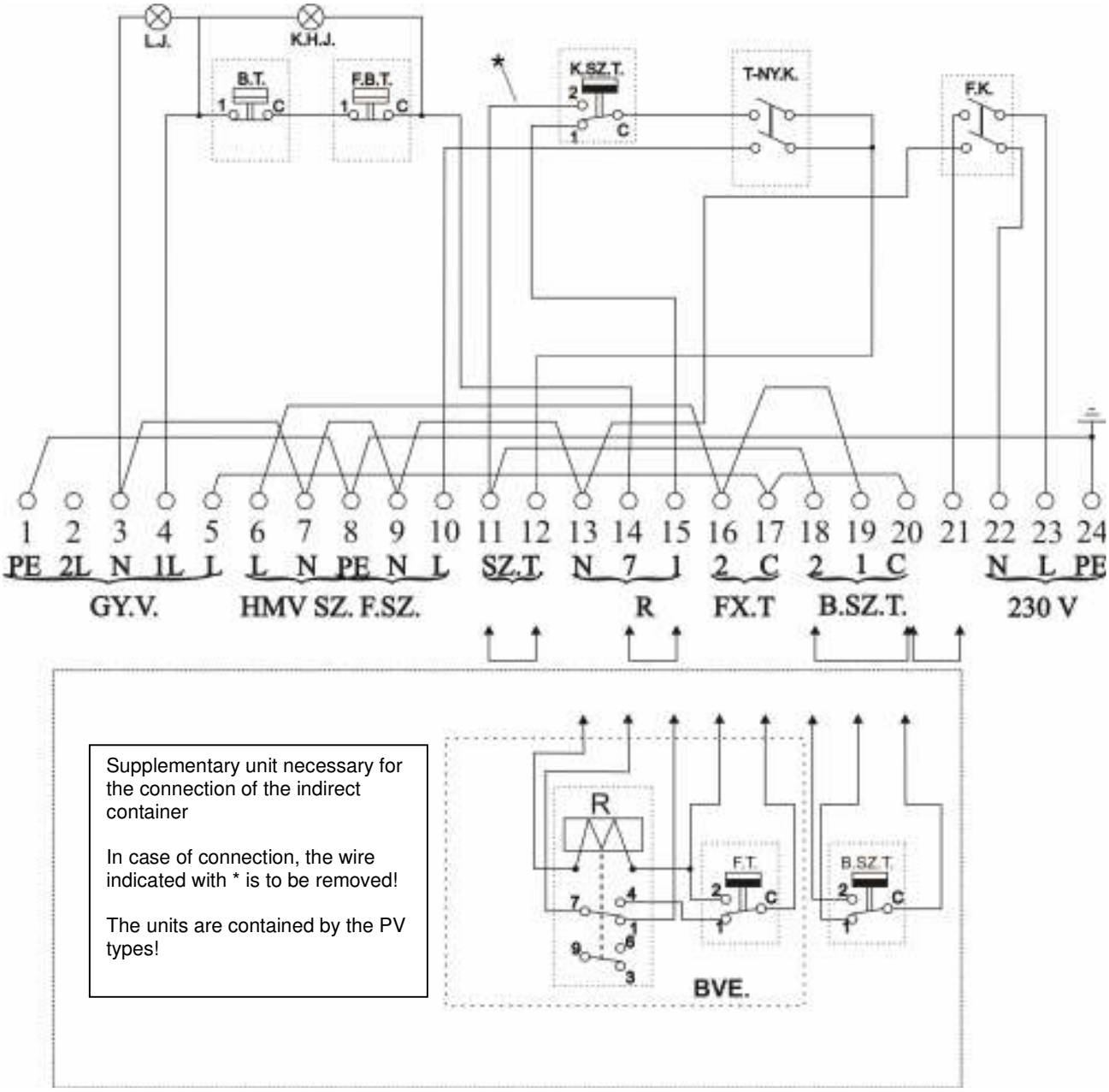
GHISS .... AP


L.J.
K.H.J.
B.T.
F.B.T.
K.SZ.T.
T-NY.K.
F.K.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
PE 2L N 1L L L N PE N L SZ.T N 7 1 2 C 2 1 C N L PE
GSZ1. HMV SZ. F.SZ. R FX.T B.SZ.T. 230 V
Supplementary unit necessary for the connection of the indirect container
In case of connection, the wire indicated with * is to be removed!
The units are contained by the PV types!
R
F.T.
B.SZ.T.
BVE.

Legends:

T-NY.K.	Winter-summer switch	G.SZ.	Gas valve
F.K.	Indicator lamp switch	HMV SZ	Pump of hot water for use
K.SZ.T.	Boiler regulating thermostat	R	Relay
B.T.	Limiting safety thermostat	B.SZ.T	Boiler regulating thermostat
F.B.T.	Smoke gas safety thermostat	F.T.	Fixed thermostat
SZ.T.	Room thermostat	N	Neutral conductor
F.SZ.	Heating circulation pump	L	Phase conductor
L.J.	Indicator lamp (flame indicator)	PE	Protective grounding
1L.	Gas magnetic valve switched phase	K.H.J	Error indication of restrictors
BVE.	Boiler control unit		

GHISS .... AE

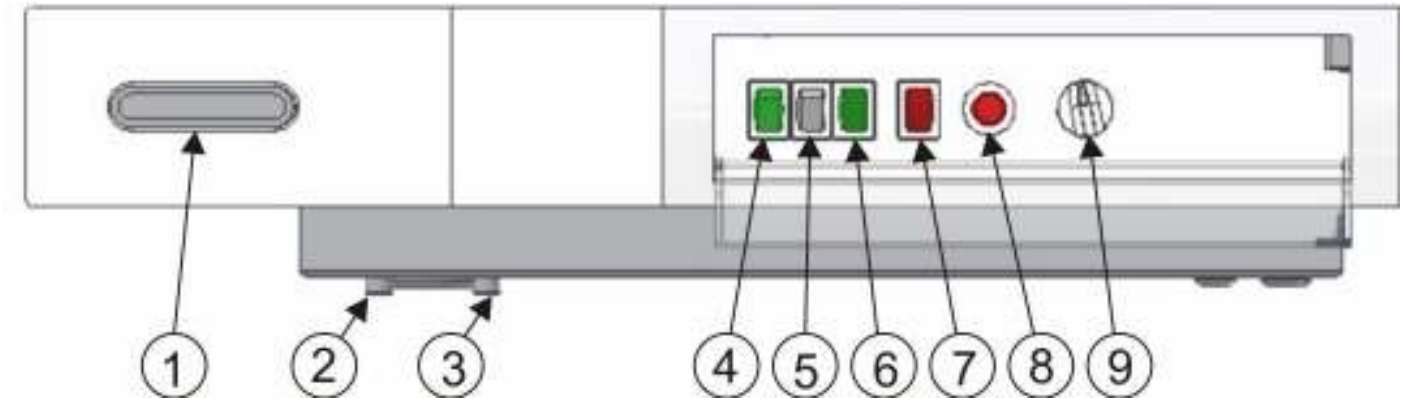

L.J.
K.H.J.
B.T.
F.B.T.
K.SZ.T.
T-NY.K.
F.K.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
PE 2L N 1L L L N PE N L SZ.T. N 7 1 2 C 2 1 C N L PE
GY.V.
HMV SZ. F.SZ.
R
FX.T
B.SZ.T.
230 V
Supplementary unit necessary for the connection of the indirect container
In case of connection, the wire indicated with * is to be removed!
The units are contained by the PV types!
R
F.T.
B.SZ.T.
BVE.

Legends:

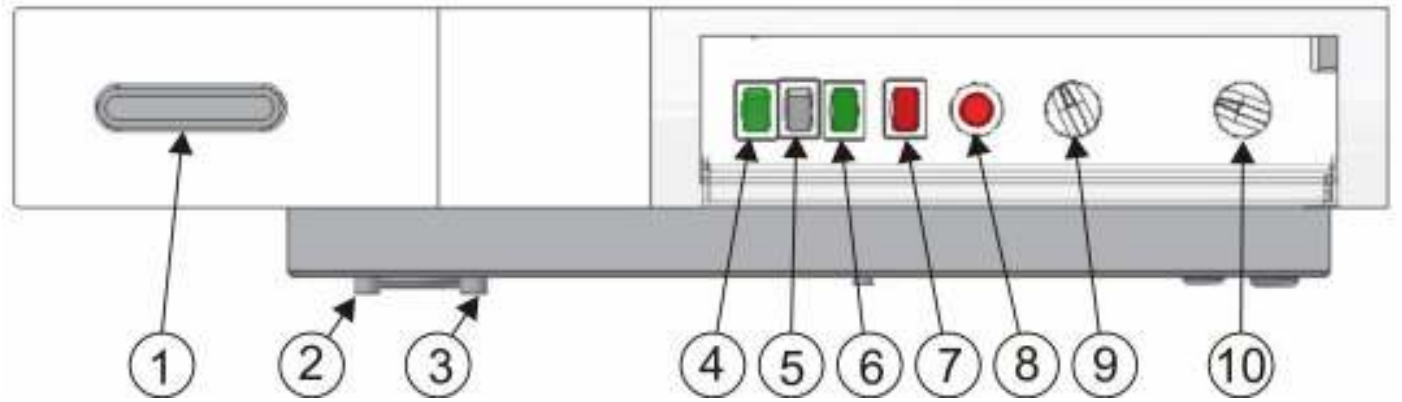
T-NY.K.	Winter-summer switch	GY.V.	Ignition control
F.K.	Indicator lamp switch	HMV SZ	Pump of hot water for use
K.SZ.T.	Boiler regulating thermostat	R	Relay
B.T.	Limiting safety thermostat	B.SZ.T	Boiler regulating thermostat
F.B.T.	Smoke gas safety thermostat	F.T.	Fixed thermostat
SZ.T.	Room thermostat	N	Neutral conductor
F.SZ.	Heating circulation pump	L	Phase conductor
L.J.	Indicator lamp (flame indicator)	PE	Protective grounding
1L.	Gas magnetic valve switched phase	K.H.J	Error indication of restrictors
BVE.	Boiler control unit		

OPERATING SURFACE

GHISS R



GHISS B



Legend:

1 – Boiler thermometer
2 – Smoke-gas restricting thermostat
3 – Temperature restricting thermostat
4 – Main switch
5 – Winter/Summer switch
6 – Mode of operation indicator lamp
7 – Error-indicator lamp
8 – Reset button (lighted)
9 – Boiler temperature setting button
10 –Hot water for use temperature setting button

SWITCHING ON

The very first start-up of the device and its gas-technical regulation are to be executed by the brand service.

Switching on the device, depending on the type:

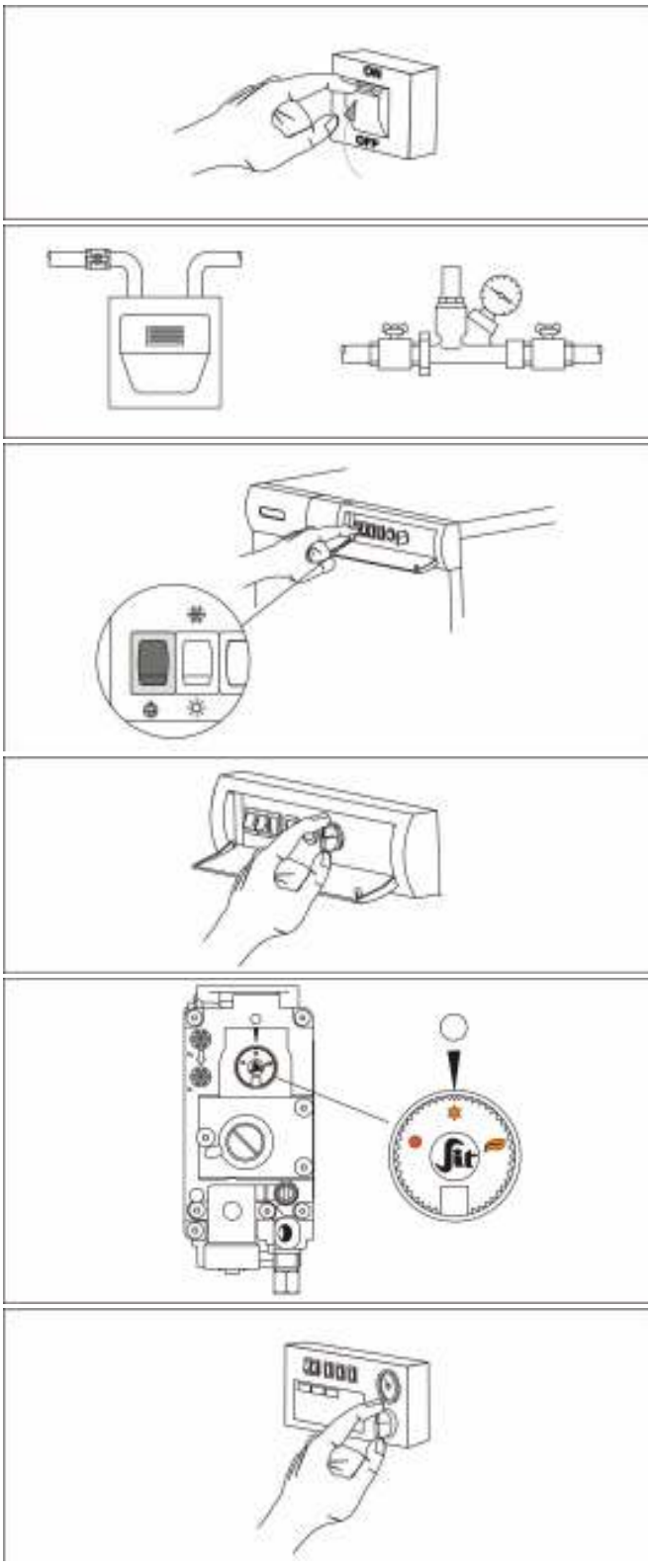
1. Semi-automatic mode of operation (AP)

In the case of SIT NOVA 820 type gas valve:

- After the device has been connected to the electric supply, open the gas tap in front of the boiler.
- Turn on the main power supply switch of the boiler.
- Set the boiler regulating thermostat at the minimum, then take off the door of the device.
- By slightly pushing in the control button of the combined gas valve, turn it in such a way that the „* ” marking is in line with the marking pressed into the metal part of the valve (pilot light).
- By pushing in the button as far as it goes, light the gas flowing out of the pilot light burner – by pressing the piezo ignition 2-3 times – then release the button after 15-20 seconds.
- If switching on is unsuccessful, it is to be repeated in 2 minutes (required for the short ventilation of the combustor).
- After the device has been started up, you can check the existence of the pilot light through the spy-hole.
- By slightly pushing in the control button of the combined gas valve, turn it in such a way that the small flame symbol is in line with the marking pressed into the metal part of the valve (main burner), then replace and close the door of the boiler.
- Set the boiler regulating thermostat at the desired value.
- Set the room thermostat at the desired value, then the main burner will go on.

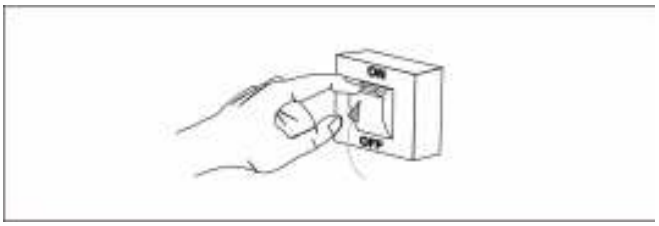
Shutting down the boiler:

- By slightly pushing in the control button of the combined gas valve, turn it clockwise in such a manner that the “dot” symbol on the button (extinction) is in line with the marking on the valve.
- The boiler that has been shut down can be re-started only after a 1-2 minute wait.

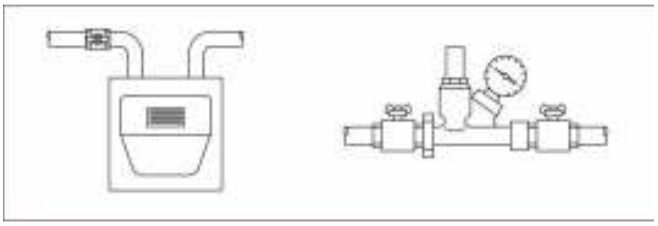


2. Automatic mode of operation (AE)

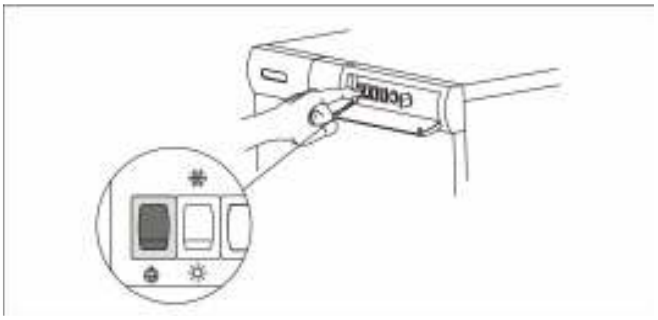
Upon the application of a SIT 840 type gas valve – there is no need to operate the gas valve manually as – simply by setting the control devices placed on the front sheet of the boiler at the desired values – the device operates automatically according to the following.



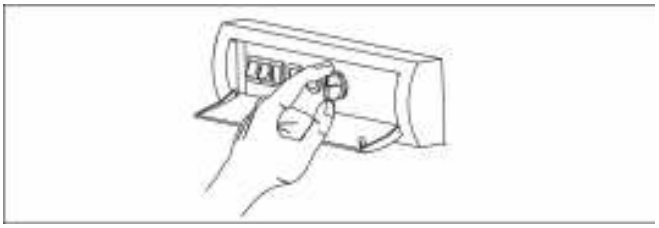
- If there is an external mains main switch installed where the device is set up, turn it on.



- Open the gas tap and the water-side closing fixtures.

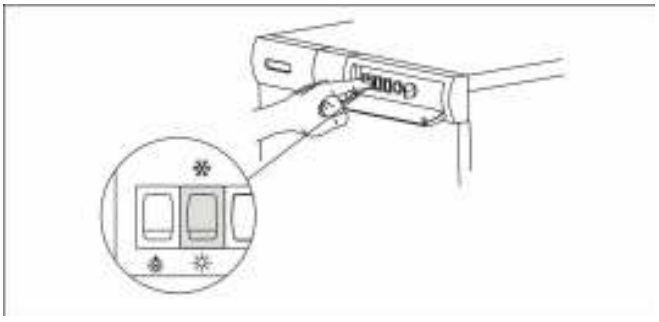


- Turn on the main switch of the electric control of the device (4),



- Set the boiler regulating thermostat (9) according to the desired temperature.

- Set the mode of operation switch (5) according to the desired mode of operation and turn it on:



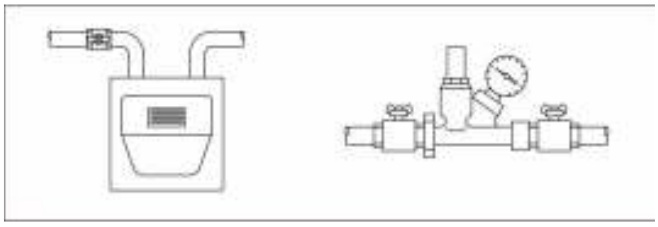
Winter mode of operation – heating and the production of hot water for use at the indirect container connected to the boiler, and on GHISS B devices (I).

Summer mode of operation – the production of hot water for use with the indirect container connected to the boiler, and on GHISS B devices (0).

The following processes will take place automatically: the electronics provides the spark, the burner goes on, and the gas boiler starts heating up according to the temperature set.
On the GHISS B type we can set the desired temperature of hot water for use with the hot water for use regulator (10).

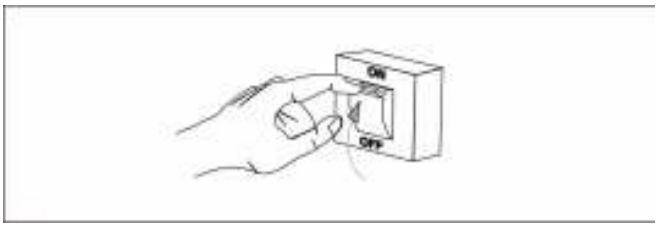
Following a longer period of being shut down, it may happen that the device does not start up. In this case, the following is to be checked and done:

- Check that the taps of the gas, water and heating system are open.



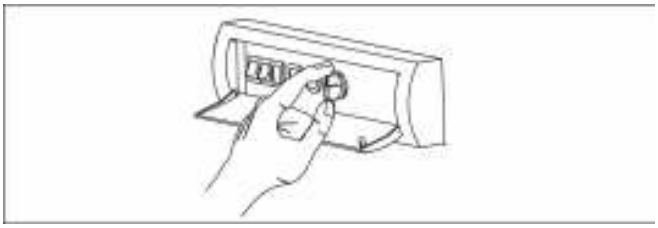
- Check whether the heating system is sufficiently filled up: the pressure has to be at least 1 bar.

- Turn off and then turn on again the exterior separator switch of the boiler.

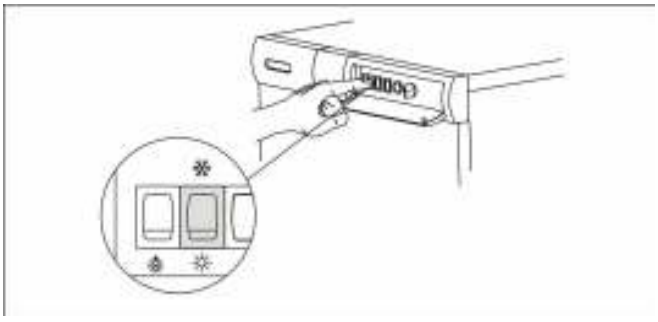


- Check the setting of the room thermostat, and carry out on it a switching on and a switching off.

- Check the setting of the boiler temperature regulator, and set it at the desired temperature.

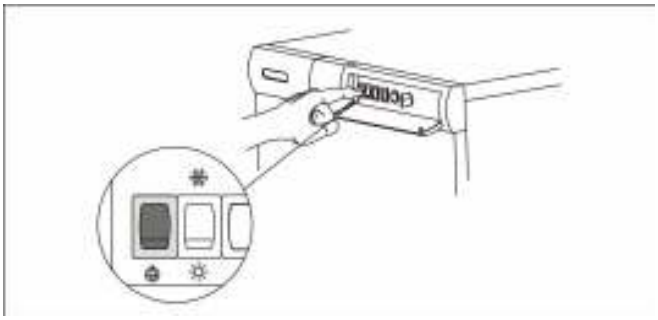


- Put the winter/summer switch into winter position (I).

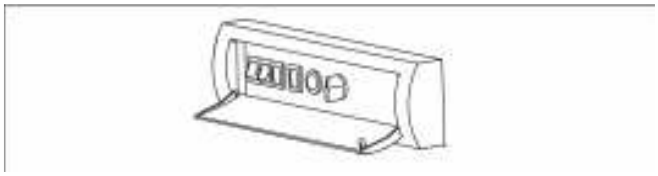


In case of the GHISS B type, in the summer setting, the boiler only produces hot water for use; same as in case of GHISS R type if the indirect container and the necessary electronic unit are connected. In other cases the device does not operate in the summer setting.

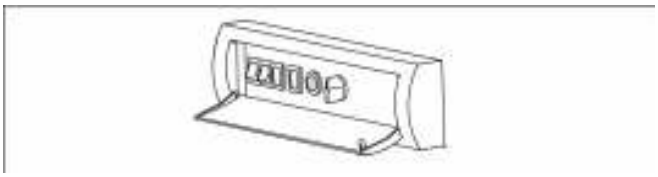
- Turn on the main switch of the boiler (the light has to go on).



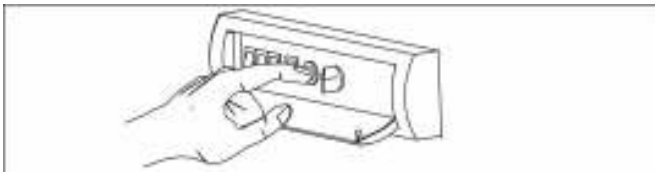
- The operation of the boiler is started and continues until the temperature of the boiler water reaches the temperature set or the room thermostat goes off.



- In the event of an ignition error, the illuminated reset button is lit in red. (AE)



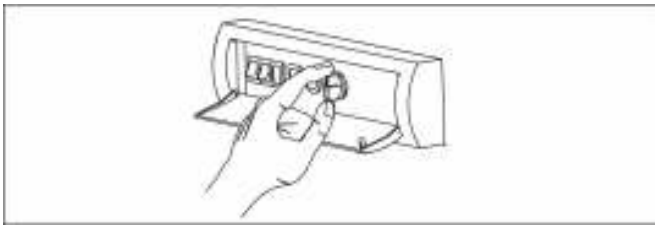
- The procedure of re-starting is the following:
  - press the reset button,
  - wait until the ignition procedure is repeated and operation starts.



If the start-up procedure is unsuccessful again, re-starting can be repeated after 1-2 minutes. The number of repeated re-starts can be maximum 3. After this, call the brand service.

SETTING THE BOILER THERMOSTAT

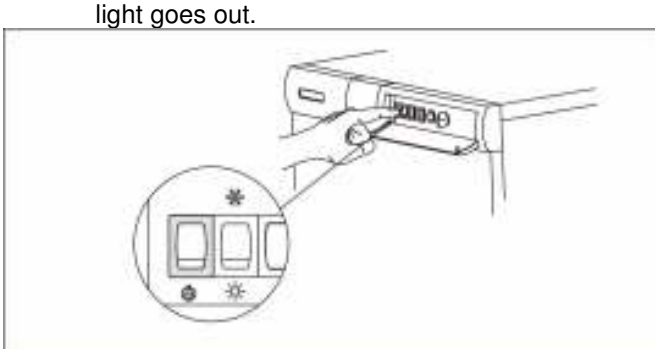
When the outside temperature changes, the heating temperature is to be adjusted as well. The colder the outside temperature is, the hotter heating water we need.
To increase the temperature of the heating water, the regulating button is to be turned clockwise; when we turn the button anti-clockwise, the temperature of the boiler will decrease. In order to avoid condensation, we should set the forward temperature in such a manner that provides a temperature of the returning water above 40°C.



TEMPORARY SHUT-DOWN

If for holiday, excursion or some other reason you want to turn off the boiler, and the outside temperatures are above zero, you have to do the following:

- Turn off the main switch of the boiler, the green light goes out.



- Turn off the external separator switch of the boiler.

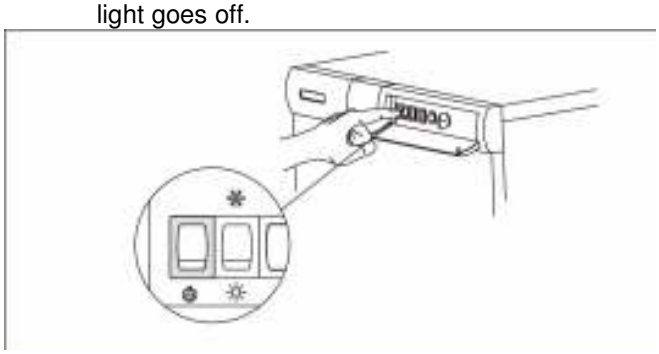
If the exterior temperatures are below zero, we have to follow a different procedure. In this case do the following:

- Set the boiler thermostat at minimum.
- Set the room thermostat at 10°C.

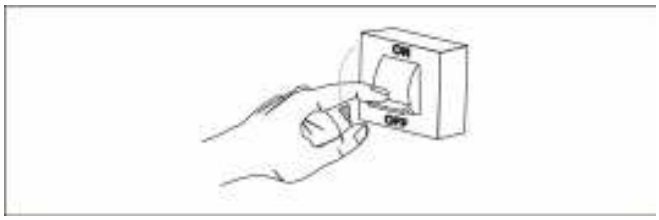
SHUTTING DOWN FOR A LONGER PERIOD OF TIME

In this case the following is to be done:

- Turn off the main switch of the boiler, the green light goes off.



- Turn off the external separation switch of the boiler.



- Turn off the gas tap.

If there is a danger of freezing, drain the heating water and the water from the hot water for use system.

CLEANING

The outer housing of the boiler can be cleaned with a soft cloth dampened with detergent. In the case of persistently soiling spots, removal can be executed with the help of a cloth dampened with a mixture of 50% industrial alcohol and water.

The cleaning of the boiler body and the smoke ducts is to be carried out by the brand service, at regular intervals.

Do not use rough scrubbing agents!
Before you start cleaning the boiler, turn off the main switch of the boiler and the external separator switch.

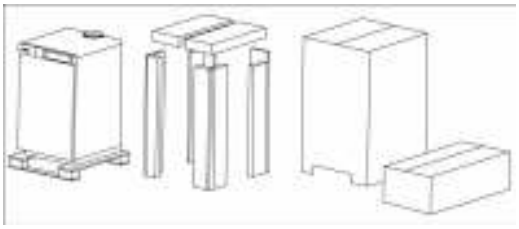
MAINTENANCE

The regular maintenance and check-up of the gas device is determined by EU decrees and standards. A brand service with skills and expertise according to the make provides the following for your device:

- greater security;
- abiding by the legal requirements;
- decreasing the likelihood of errors.

THE DOCUMENTATION OF THE PRODUCT

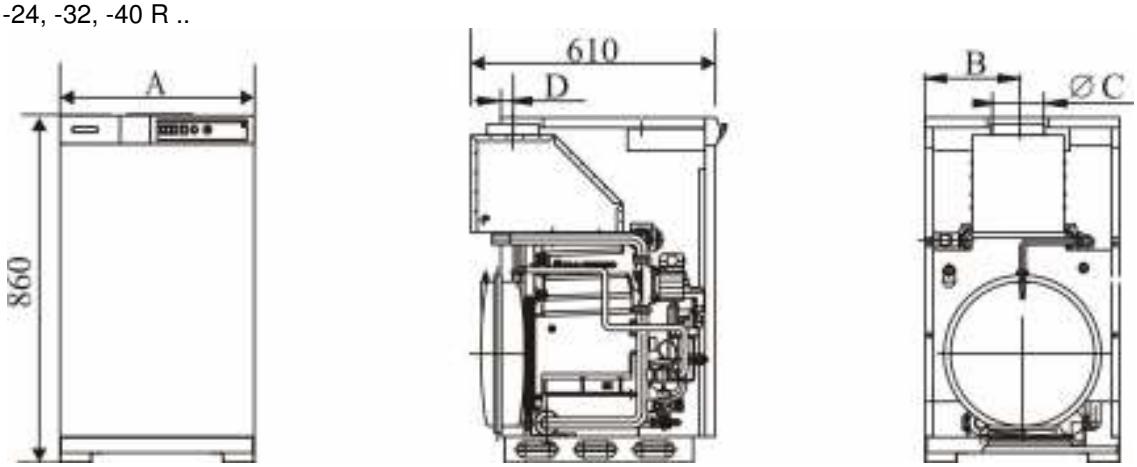
The operating instructions belonging to the product are placed in a nylon bag, on top of the device, within the packaging.



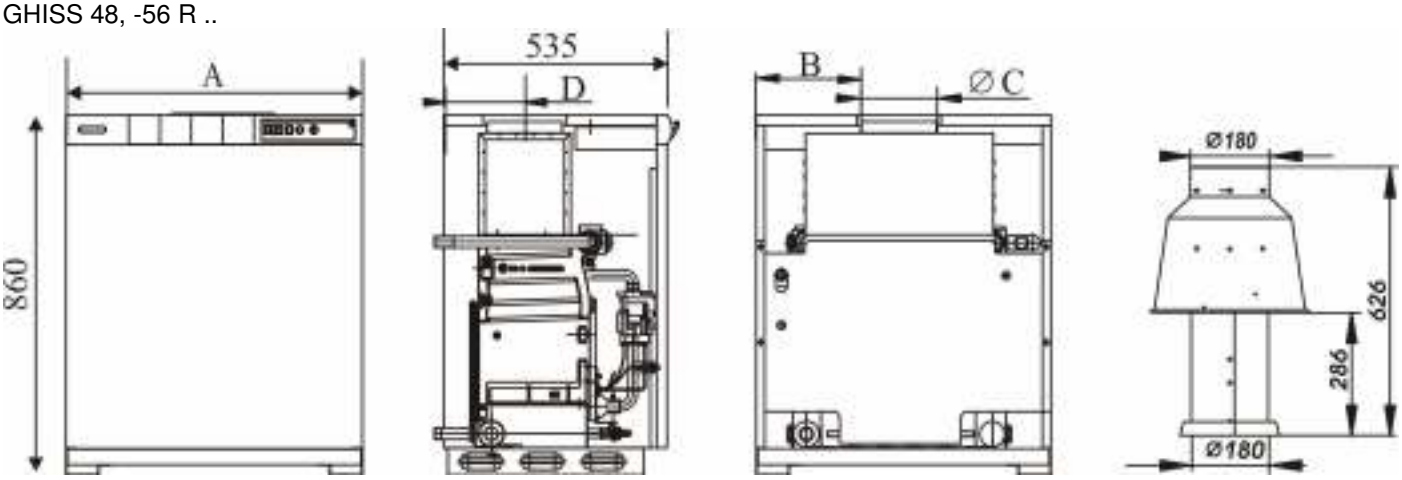
- You can find the documentation after you have unpacked the device; read it carefully and abide by the advice and instructions described.
- The external deflector belonging to the GHISS R 48 and 56 devices are attached in a separate box.

SIZES AND WEIGHT

GHISS 16, -24, -32, -40 R ..

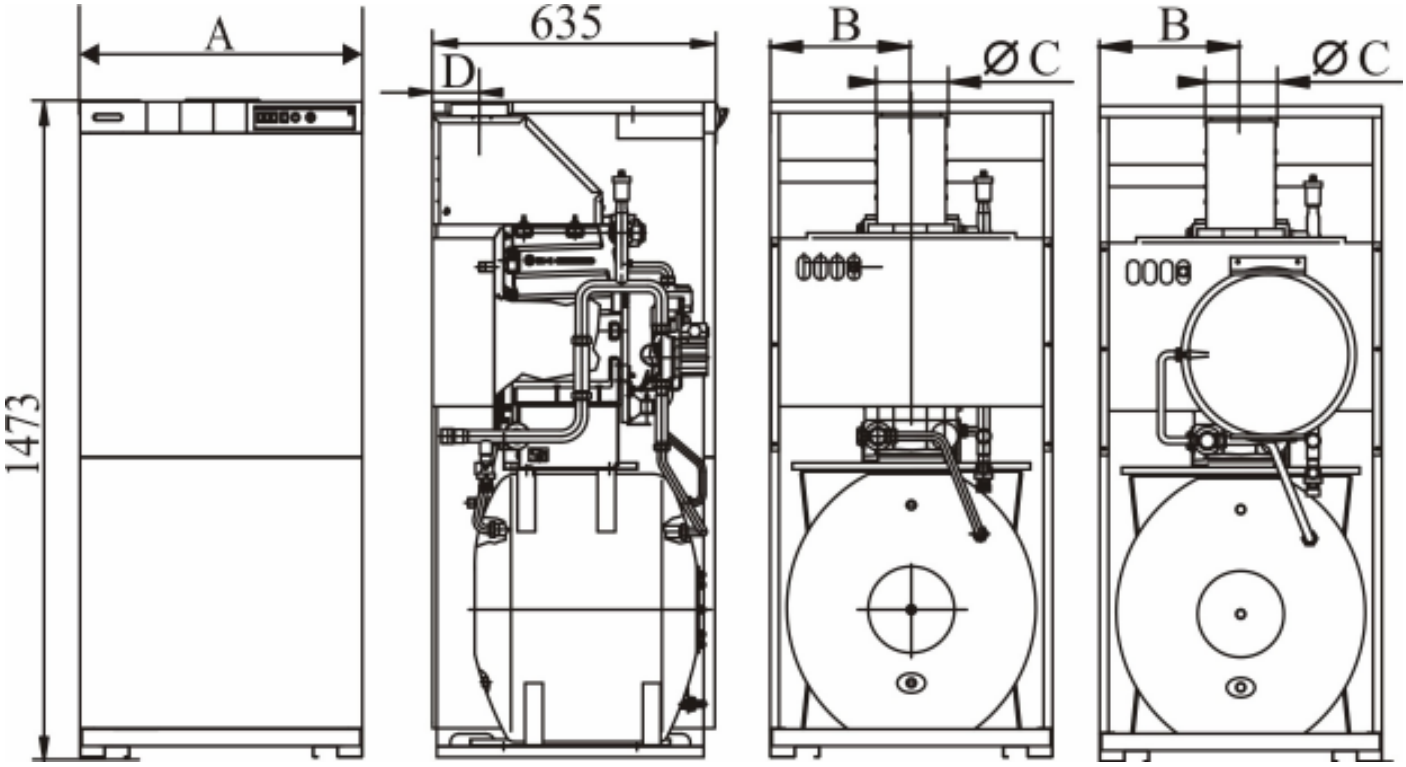


GHISS 48, -56 R ..



	Type						
	GHISS 16 R .. GHISS 16 R ..PV	**GHISS 24 R .. GHISS 24 R ..PV**	**GHISS 32 R .. GHISS 32 R ..PV**	**GHISS 40 R ..**	**GHISS 48 R ..**	**GHISS 56 R ..**	
A	410	485	560	635	710	785	Mm
B	195	232.5	270	307.5	345	382.5	Mm
C	130	130	130	150	180	180	Mm
D	30	30	30	50	197	197	Mm
Weight	92	106	120	134	145	160	Kg

GHISS B AP, GHISS B AE, GHISS B AP PV, GHISS B AE PV



	Type				
	GHISS 16 B .. GHISS 16 B ..PV	**GHISS 24 B .. GHISS 24 B ..PV**	**GHISS 32 B .. GHISS 32 B ..PV**	**GHISS 40 B ..**	
A	635	635	635	635	mm
B	317.5	317.5	317.5	317.5	mm
C	130	130	130	150	mm
D	105	105	105	125	mm
Weight	147	160	173	190	kg

THE BOILER ROOM

UNICAL GHISS boilers are allowed to be installed only in rooms where the replacement of the amount of air necessary for the device according to the standards (ventilation) is secured, and which satisfy the fire-protection and other requirements.

⛔ There is no frost-protection function in these boilers, therefore, they can be installed only in rooms where there is no danger of freezing!

THE CONNECTION OF THE BOILER TO THE EXISTING OLD HEATING SYSTEM

If we connect the boiler to the old heating system, the following instructions must be abided by:

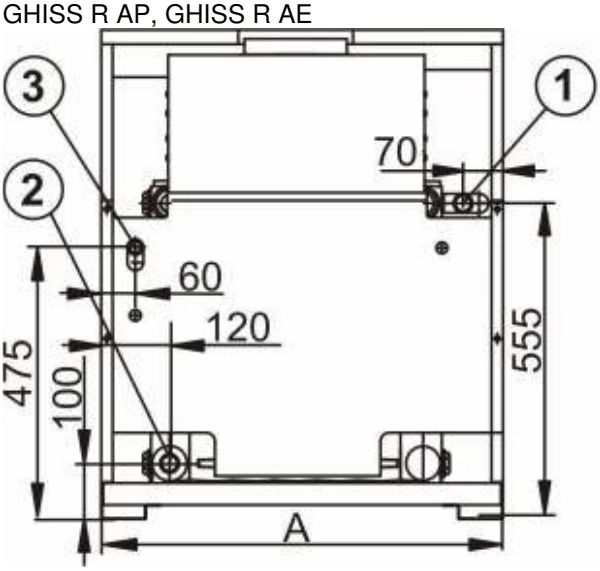
- The diameter and height of the chimney should satisfy the new requirements, should be of the necessary cleanness and should provide the appropriate amount of draught.
- The electric system should meet the regulatory requirements of the boiler.
- The pipes and fixtures of natural gas or tanked gas should provide the amount and pressure of the fuel specified for the boiler, according to the standards.
- The closed expansion tank of the system should be of the necessary size and pre-tensioning pressure so it can compensate the changes in pressure of the system due to the change in temperature.
- The output of the heating circulation pump, as well as the place and direction of installation should satisfy the new requirements.
- The hydraulic system should be free of air and sediment. This can be achieved through the thorough cleaning of the system prior to connection. A better result can be achieved with chemical washing.
- The requirements with respect to the chemical composition of the water of the system can be found in the table.

Water-quality values	
PH	
Electric conductibility	< 200 mV/cm (25°C)
Chloride ion	< 50 ppm
Sulphuric acid ion	< 50 ppm
Complete iron contents	< 0,3 ppm
Alkaline metals	< 50 ppm
Water hardness	35°F
Sulphur ion	None
Ammonia ion	None
Silicon ion	< 50 ppm

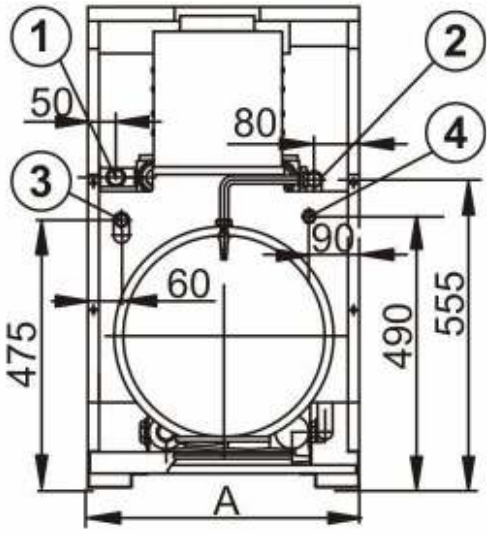
HYDRAULIC CONNECTION

The place of the connection of the heating system and water system for use to the boilers is illustrated by the following graphs.

GHISS R AP, GHISS R AE

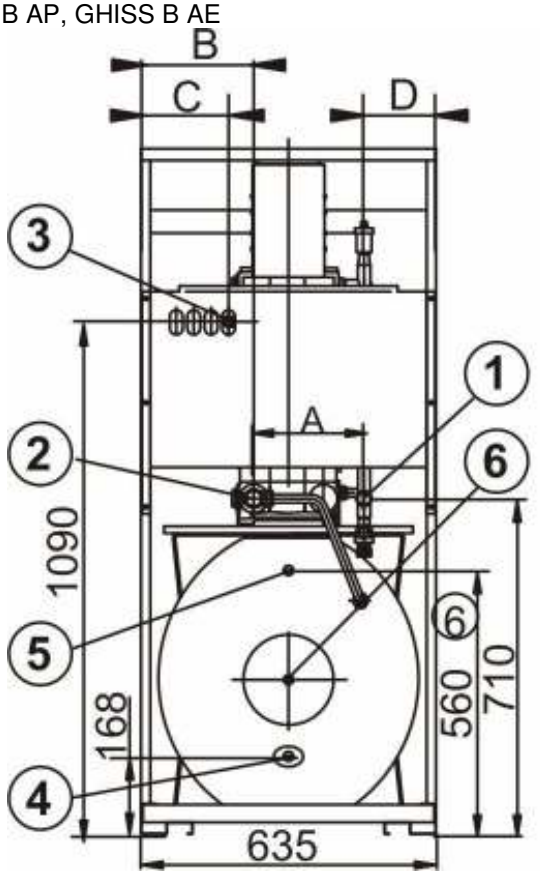


GHISS R AP PV, GHISS R AE PV

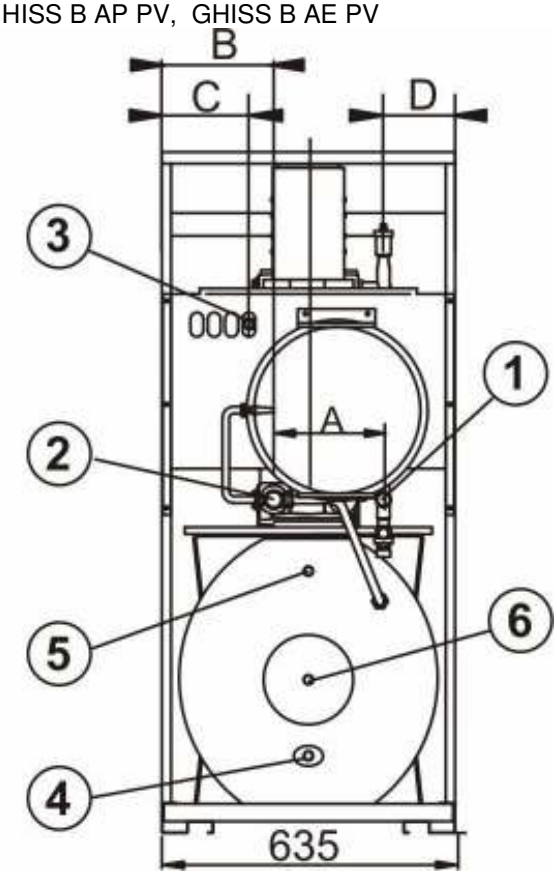


	GHISS R 16 GHISS R16..PV	GHISS R 24 GHISS R24..PV	GHISS R 32 GHISS R32..PV	GHISS R 40	GHISS R 48	GHISS R 56	
1 – forward	1”						Ø
2 – return	1”						Ø
3 – gas	¾”						Ø
4 – cold water for use	½”						Ø
A	410	485	560	635	710	785	mm

GHISS B AP, GHISS B AE



GHISS B AP PV, GHISS B AE PV



	GHISS B 16 GHISS B16..PV	GHISS B 24 GHISS B24..PV	GHISS B 32 GHISS B32..PV	GHISS B 40	
1 – forward	1”				Ø
2 – return	1”				Ø
3 – gas	¾”				Ø
4 – cold water for use	½”				Ø
5 – hot water for use	½”				Ø
6 – circulation	½”				Ø
A	240	315	390	465	mm
B	240	202.5	165	127.5	mm
C	188	150.5	113	75.5	mm
D	155	117.5	80	42.5	mm

⚠ The selection of the type best fitting the heating system of the building is the task of the designer.

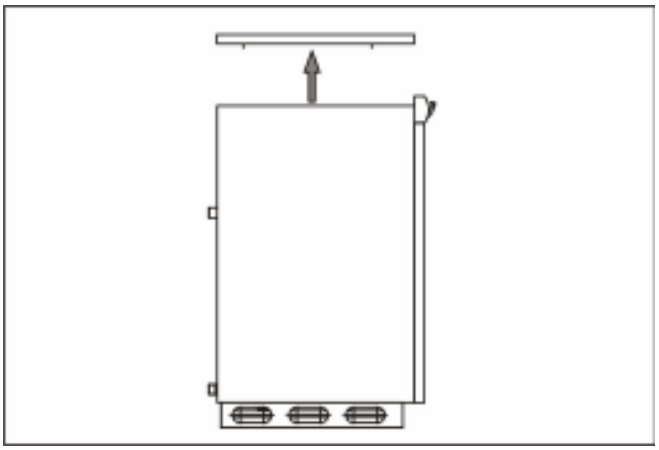
⚠ If need be, the heating system can be filled up with anti-freeze fluid.

ELECTRIC CONNECTIONS

The devices are equipped with the following electric connections. Main circuit connection 230 V 50 Hz, room thermostat connection and – with the exception of the PV types – heating pump connection. These connections – which are of serial hook execution and are provided with the appropriate labels – are located within the appliance box.

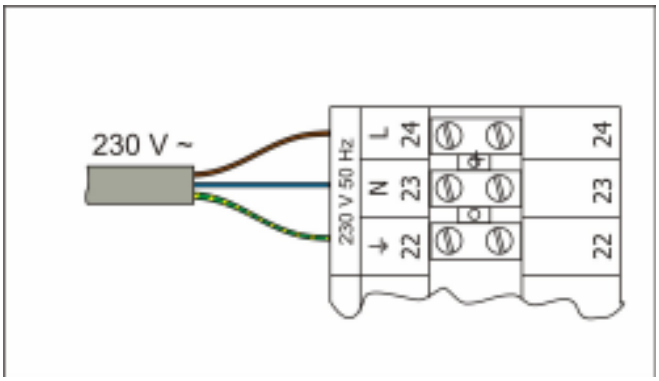
Access can be achieved in the following way:

- Lift off the top of the boiler, which is fixed by snaps.

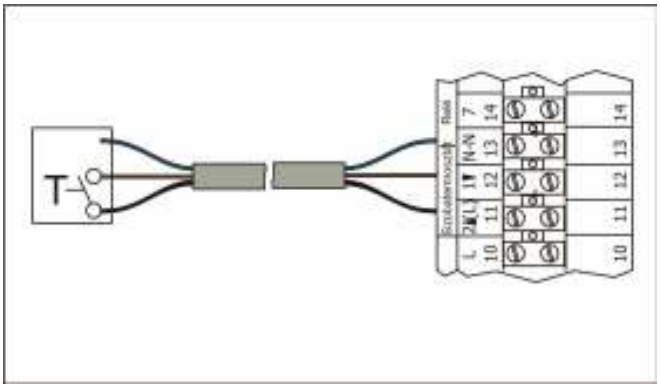


- Screw out the screws of the top of the appliance box; now you have access to the connecting hooks.

⚠ There is 230 V 50 Hz voltage present on the connectors of the device, therefore, in order to avoid accidents, before you remove the top of the appliance box, turn off the external separator switch!



⚠ The connection of the room thermostat can be double-wired or, if it is necessary for the operation of the thermostat, triple-wired.



The following rules must be abided by upon the execution of the electric connections:

1. Connect the mains cable in a polarity-correct way to the electric mains. The maximum length of this can be 3 m.
2. The markings upon connection: L – phase conductor, N – neutral conductor.
3. The recommended cross-section of the connecting cables is 1.5 mm^2, and it is to be damage-free hose conductor.
4. Connection is to be performed according to the electric switching diagram.
5. The connection of a protective conductor is obligatory.

Gas and water pipes must not be used for the protective wire! The boiler and the pipe system are to be connected with the shock-proofing system with a standard protective conductor. The manufacturer undertakes no responsibility for incorrect execution!

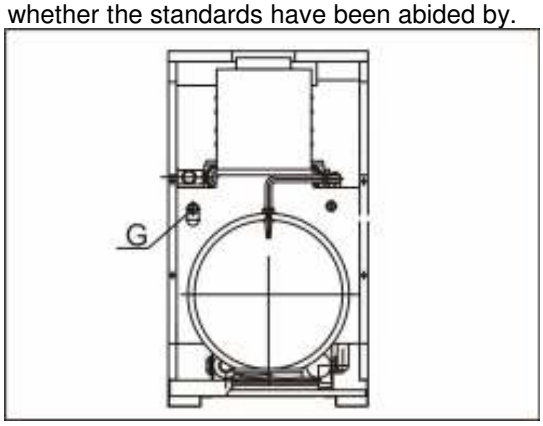
GAS CONNECTION

The device can be connected either to a piped natural gas or tanked gas (LPG) system.
Before you execute the connection, the following is to be performed:

- Check what gas type the boiler has been regulated for and what is at disposal upon connection.
- Check the cleanness of the gas pipe and if necessary, install a filter in front of the boiler.

The gas connection must ensure gas of the appropriate quantity and pressure, and the appropriate operation of the measuring and safety system must be checked.

After you have connected the device to the gas system, check whether the seal is intact and whether the standards have been abided by.



The gas pipe connection size of every GHISS device type is ¾".

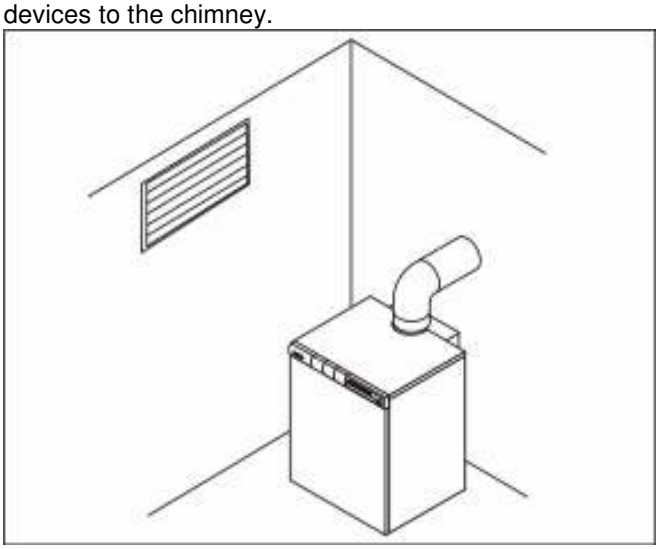
CONDUCTING COMBUSTION PRODUCTS

Connect the boiler to the chimney according to the valid standards and requirements.
Connection is to be executed with rigid pipes, providing for appropriate caulking, also counting on the condensing water that may be produced. The mechanical attachment of connecting pipes should be secured against movement and slipping out.

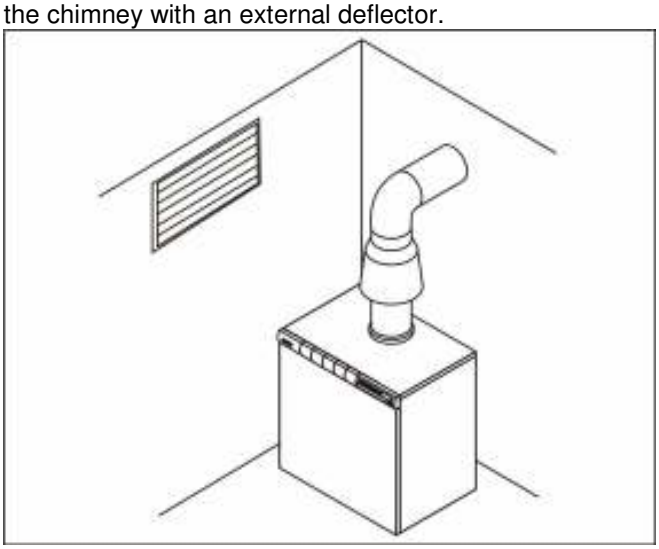
The boilers are equipped with smoke gas restricting thermostat, which, in case smoke gas flows back, close down the operation of the boiler in an interlocked manner

The use of un-insulated external chimney poses potential dangers.

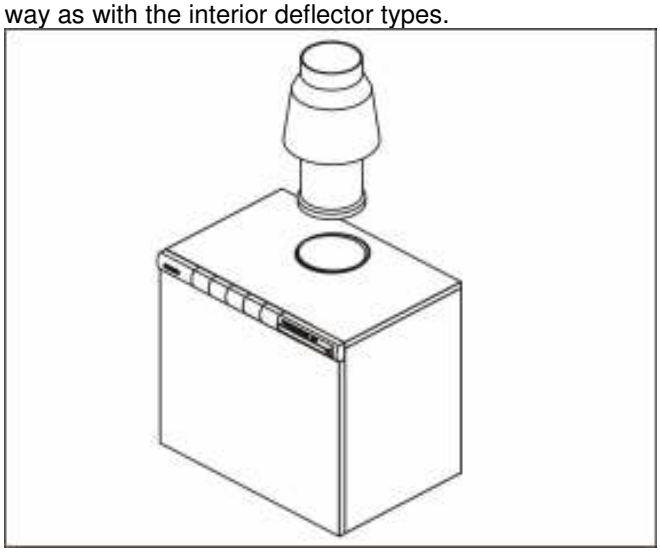
The connection of GHISS 16, -24, -32, -40 .. .. type devices to the chimney.



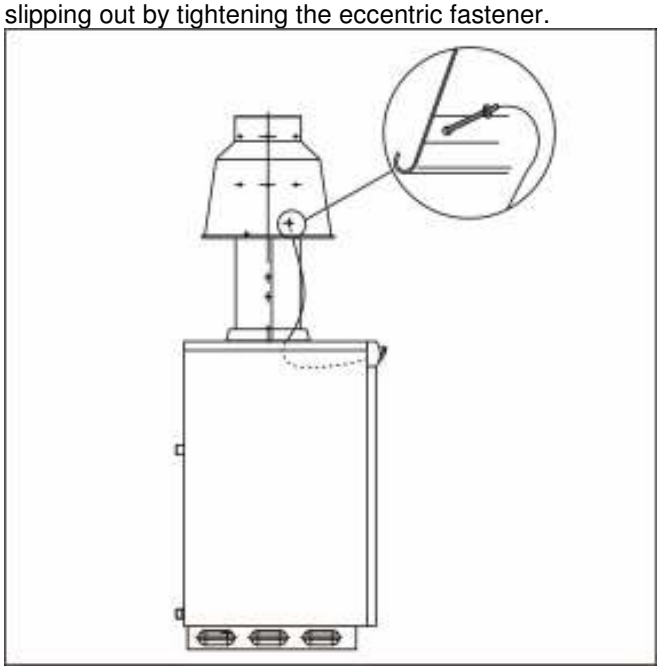
GHISS 48, -56 .. .. type devices are to be connected to the chimney with an external deflector.



After the connection of the deflector to the boiler, connection to the chimney is to be prepared the same way as with the interior deflector types.



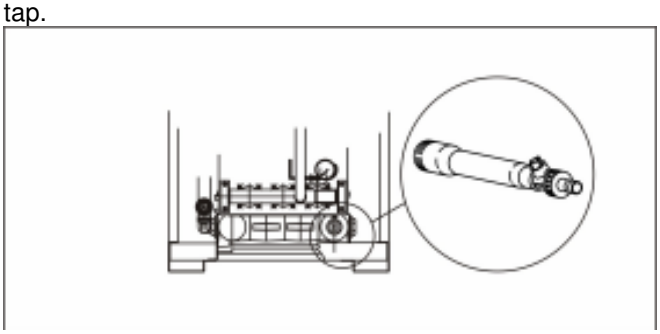
In case of an exterior deflector, the sensor of the smoke gas restricting thermostat is to be placed in the deflector, in the manner indicated in the graph. The sensor has to be put into the bore hole on the internal brace of the deflector as far as it goes, and must be secured against slipping out by tightening the eccentric fastener.



The provision of air necessary for the operation of the boiler is to be secured through the doors and windows on the walls of the room or with the help of vent-holes!

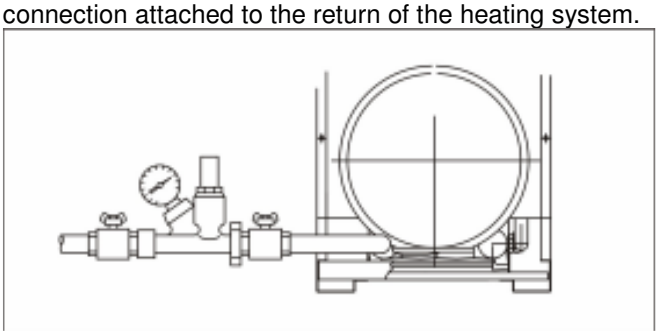
FILLING UP AND DRAINING THE SYSTEM

With the GHISS R AP and GHISS R AE type devices, the filling up of the system can be executed through the filling up – draining tap on the boiler.
With the GHISS R AP PV and GHISS R AE PV types, if the device has been connected to the water system, filling up can be performed through the filling up tap located on the device, or through the filling up – draining tap.



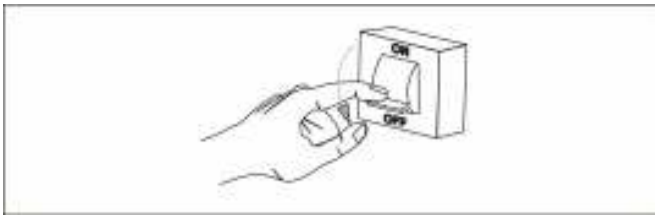
With the GHISS B type devices, filling up is possible from the CHW container, by opening the built-in filling up tap.

Filling up can also be performed with the pipe-connection attached to the return of the heating system.



Before you start filling up, the following is to be executed:

- Turn off the main switch of the boiler.
- Open the filling tap as far as the pressure of the system reaches 1.5 bar.
- Close the filling tap.
- Turn on the boiler.



Draining:

- Before you start draining, turn off the boiler.
- Open the draining tap.

PREPARATIONS FOR START-UP

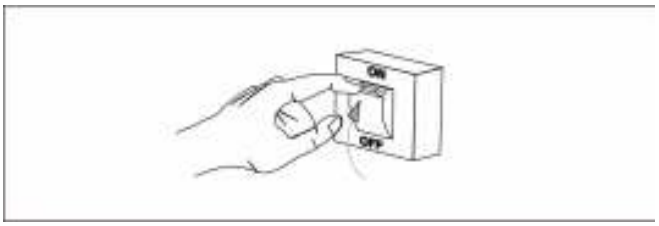
Before you turn on the device, take off the door of the boiler and check the following:

- ❖ The heating system and the gas connection taps are open.
- ❖ The type and connection pressure of the gas is in line with the device.
- ❖ While cold, the pressure of the heating system is above 1 bar, and is to be free of air.
- ❖ The pressure of the expansion tank before the system is filled up should be 0.8 ~ 1 bar.
- ❖ The connection of the electric system is appropriate for the device.
- ❖ The connection of the combustion product conducting pipe is appropriate.

FIRST START-UP

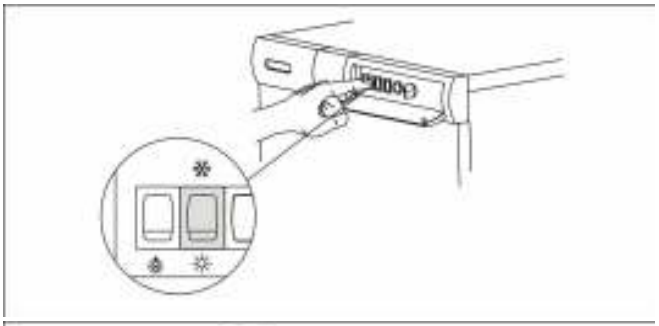
For the start-up of the device, do the following:

- o Turn on the external separator switch.



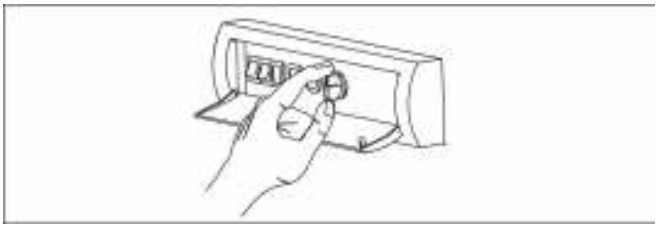
- o Set the room thermostat at the desired temperature.

- o Set the winter-summer switch to winter setting (I).

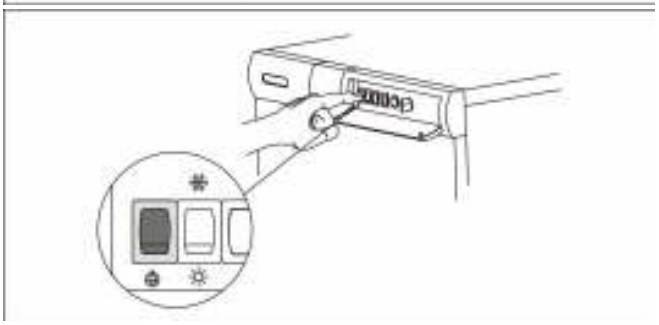


⚠ In the summer setting, with the GHISS B type, the boiler performs only the production of hot water for use, while in the case of the GHISS R type if the indirect container and the necessary electronic unit are connected. In other cases, the device does not work in the summer position.

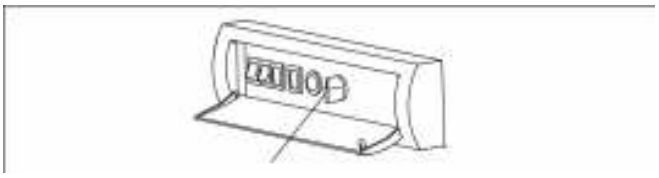
- o Set the boiler regulating thermostat at the desired temperature.



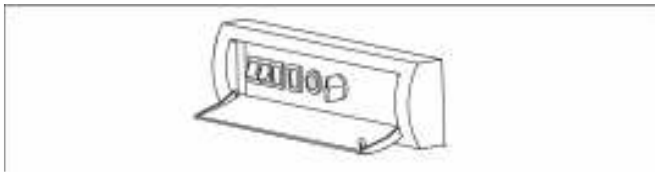
- o Turn on the main switch of the boiler, the green light must be on.



The ignition process of the boiler starts, sparks are generated automatically, then it operates continuously until either the boiler or the room thermostat turns off.

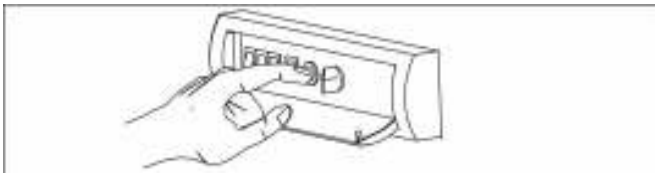


In case of an ignition error, the illuminated reset button lights up in red.

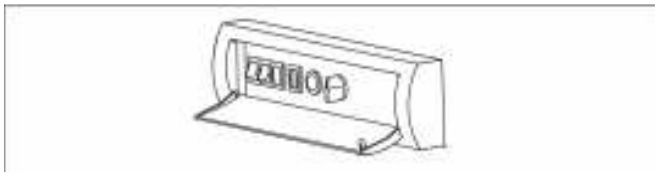


The procedure for re-starting is the following:

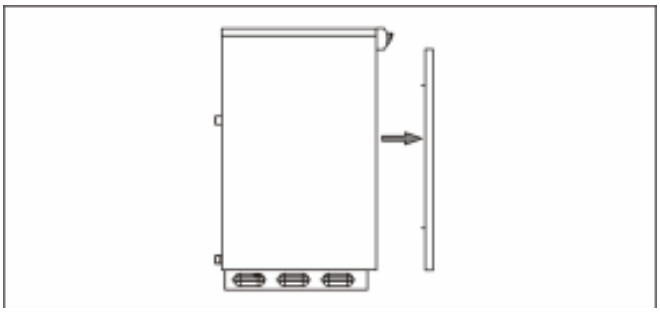
- press the reset button,
- wait for the ignition procedure to repeat, then operation starts.



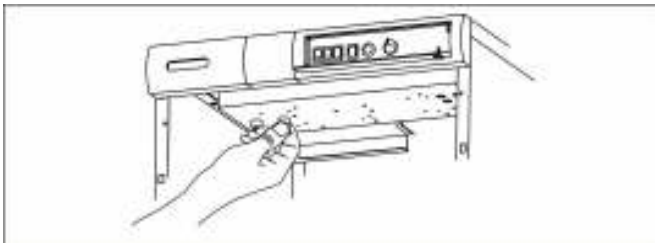
It may happen that during continuous operation the boiler stops and the error indicator lamp lights up.
For re-establishment, do the following:



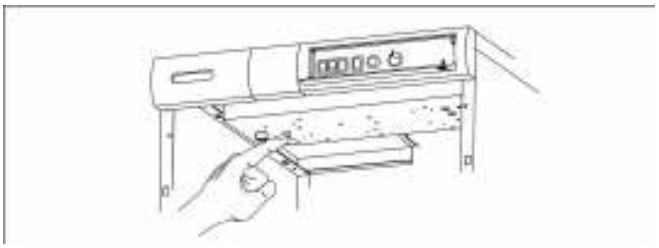
- Take off the door of the boiler, fastened by snaps.



- There are two protective hexagon plastic caps at the bottom of the appliance box. Twist them off and under each of them is a press-button. The one on the left is the smoke gas restricting, the one on the right is the temperature restricting thermostat.



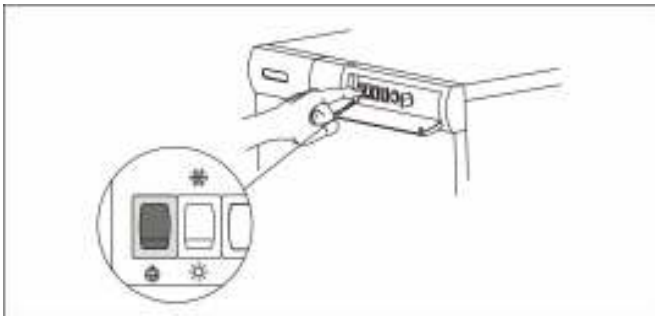
- Push in the buttons as far as they go. At the thermostat that was turned off, a click is heard when pushed, the error indicator lamp goes out, and the ignition of the device starts again.



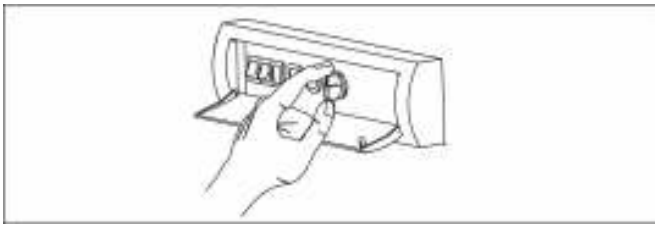
CHECKING DURING OPERATION

After starting up, the following are to be checked:

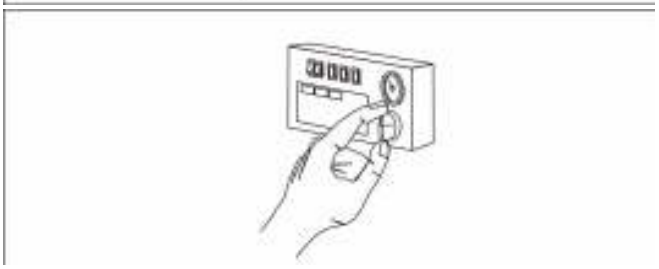
- The operation of the boiler main switch by turning it on and off.



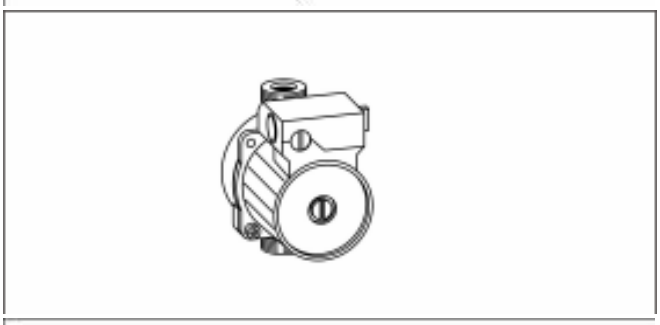
- The operation of the boiler thermostat by turning it off and on.



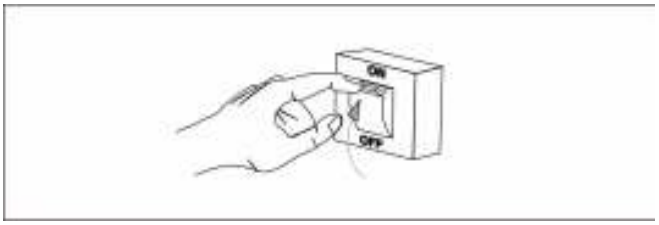
- The operation of the room thermostat by turning it off and on.



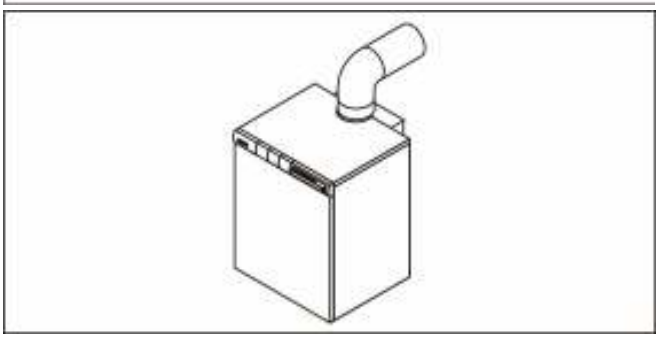
- The operation of the pump.



- The operation of the external separator by turning it off and on.

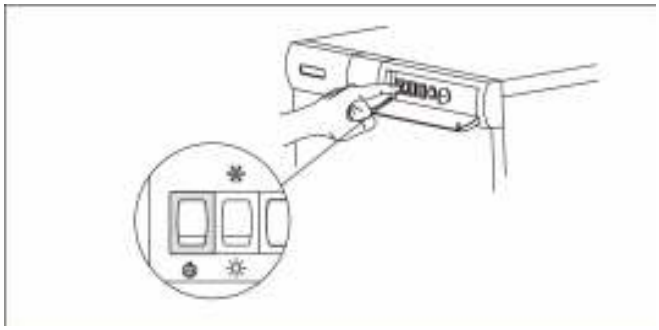


- If everything is operating perfectly, the checking of the draught of the chimney and heating technical calibration follows.

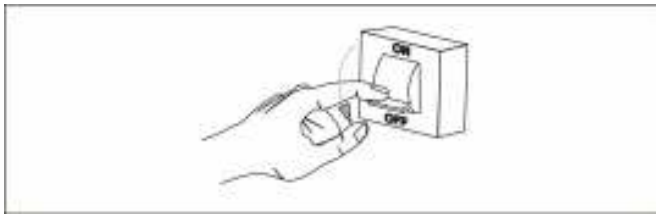


SHUTTING DOWN FOR A LONGER PERIOD OF TIME

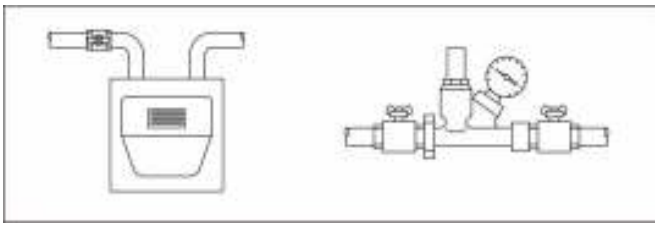
In this case, the following is to be done:



- Turn off the main switch of the boiler, the green light goes out.



- Turn off the external separator switch of the boiler.



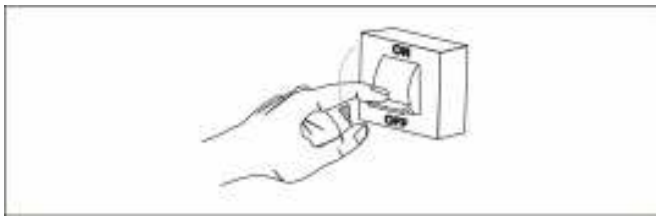
- Turn off the gas tap.

⚠ **If there is a danger of freezing, drain the water from the heating and the hot water for use systems.**

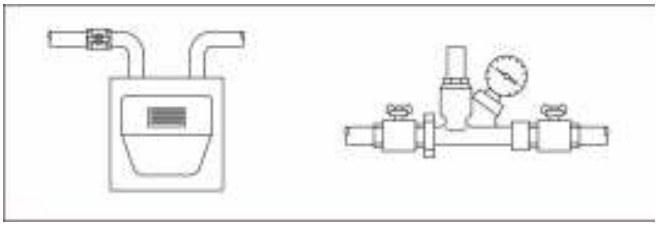
MAINTENANCE

Based on the standards and regulations, gas devices require regular maintenance and periodical check-ups. This increases the operational safety of the device and – with the maintenance – we can secure that the device always operates with the best degree of efficiency, thus we can achieve the most optimal gas consumption.

Before you start the maintenance:



- Turn off the main separator switch.



- Turn off the gas connection tap.

CALIBRATION

In the factory, the boilers are calibrated for piped natural gas (G20), which is indicated on the boilers with a label! The volume set can differ from the specified value by ±5%. The calibrated values can be found in the following table. These are needed because following a possible repair it is necessary to carry out the setting of the device; calibration is also necessary if the type of gas has to be changed.

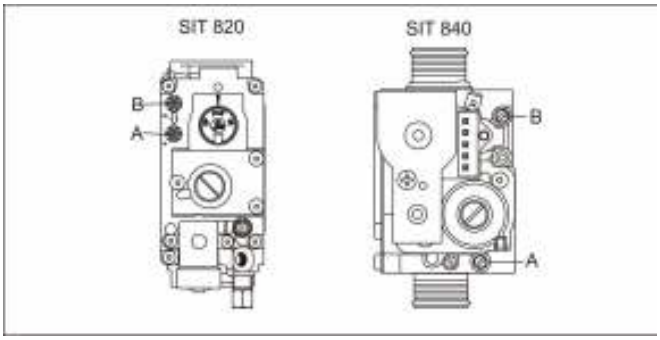
- ⚠ The gas technical regulation of the gas device as well as switching over to another type of gas can be carried out only by the members of the brand service!
- ⚠ The method of switching to another type of gas will be introduced below.

	GHISS 16...			GHISS 24...			GHISS 32...			GHISS 40...			GHISS 48...			GHISS 56...		
	G20	G30	G31	G20	G30	G31	G20	G30	G31	G20	G30	G31	G20	G30	G31	G20	G30	G31
„Wobbe index" [MJ/m3]	45.7	80.9	70.9	45.7	80.9	70.9	45.7	80.9	70.9	45.7	80.9	70.9	45.7	80.9	70.9	45.7	80.9	70.9
Nominal pressure [mbar]	20	29	37	20	29	37	20	29	37	20	29	37	20	29	37	20	29	37
Minimum pressure [mbar]	17	17	25.9	17	17	25.9	17	17	37	14	17	29.5	14	17	29.5	14	17	29.5
Number of nozzles [pcs]	2			3			4			5			6			7		
Nozzle size Ø [mm]	2.35	1.45	1.45	2.35	1.45	1.45	2.35	1.6	1.6	2.35	1.6	1.6	2.45	1.6	1.6	2.45	1.6	1.6
Nozzle pressure [mbar]	12.8	21.4	25.9	12.5	21.4	27	11.6	16.5	22	12.0	17.2	24.1	11.5	19.5	24.5	11.5	18.6	24
Gas consumption [m3/h]	1.6	0.49	0.65	2.54	0.74	0.98	3.33	0.97	1.28	4.28	1.25	1.65	5.13	1.5	1.98	6.13	1.8	2.37

The data in the table are provided at 15℃ and 1013 mbar air pressure.

Nozzle pressure can be checked at two places. One is Stud "A" the on the gas valve control stud, the other is at the control stud at the end of the nozzle holder collector. Checking connection pressure is possible at Stud "B".

- Connect the pressure gauge onto the measuring stub.
- Start the boiler in the manner described above.

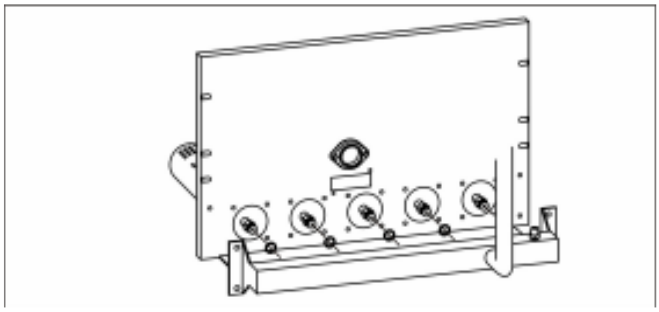


Setting nozzle pressure

- Remove closing bolt number 1 of the gas valve.
- Set the value of pressure at the value indicated in the table with bolt number 2 (the bolt under the closing bolt). By turning the bolt to the right, pressure increases, by turning it into the opposite direction, it decreases.
- With bolt number 3, on AP type devices, the size of the pilot light can be regulated.
- Remove the measuring device and put back the closing bolts.

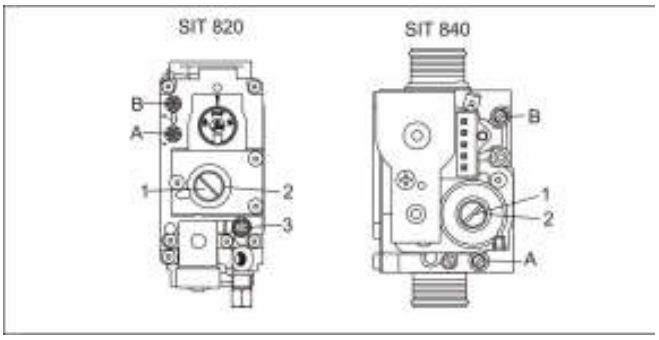
SWITCHING OVER TO ANYOTHER TYPE OF GAS

During the course of their production, the boilers are produced and calibrated for G20 type natural gas.
Switching the devices to another type of gas and carrying out its gas technical calibration can only be carried out by the brand service!
Switching over to another type of gas – e.g. G30 (propane) – involves the following:



Replacing the nozzles

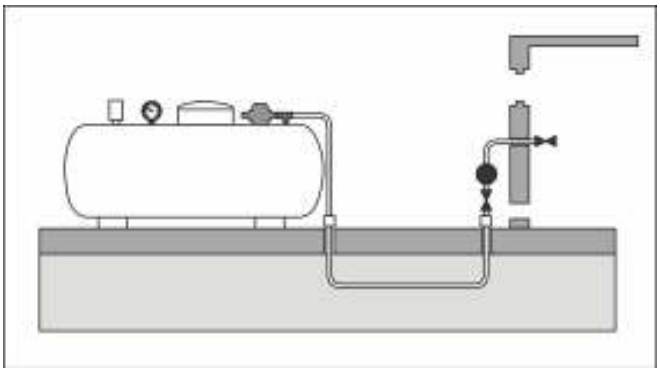
- Take off the door of the boiler
- Screw the nozzles out of the collector and in their place screw in the nozzles of the right size for the gas type. Use the washers!



Gas technical calibration

- Connect the pressure gauge on the measuring stub (A).
- Start the boiler in the manner introduced earlier.
- Remove closing valve number 1 of the gas valve.
- With the help of bolt number 2, set the pressure value to the value specified in the table (the bolt under the closing bolt). By turning the bolt to the right, pressure increases, by turning it into the opposite direction, it decreases.
- Remove the measuring device and put back the closing bolts.

When switching the gas device to another gas type, the size of the nozzle and the value of the gas pressure are to be the same as the values specified in the table introduced above!

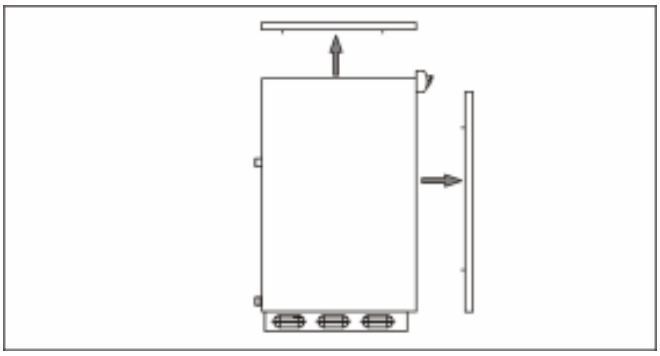


- Before and during calibration, check the pressure of the tanked gas system.
- Check the density of the complete pipe system.
- Remove the label “Calibrated for G20” stuck under the gas connection, and instead post a label referring to the current gas type.

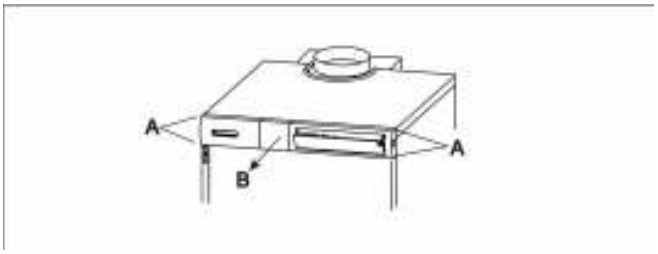
CLEANING THE BOILER

The outer housing of the boiler can be cleaned with a soft cloth dampened with detergent. In the case of persistently soiling spots, removal can be executed with the help of a cloth dampened with a mixture of 50% industrial alcohol and water.

It is forbidden to use paints and other thinners with an aggressive effect!

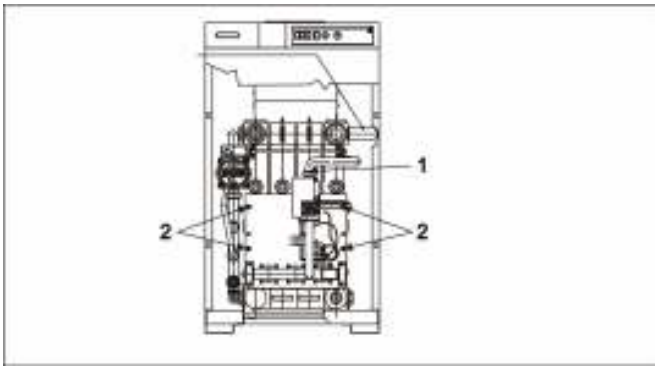


- You will have access to the internal parts by removing the door and the top sheet.



- If the appliance box is to be removed, it can be pulled out after the release of the snaps marked “A”, in “B” direction.

- For the removal of the gas burner, flare nut number 1 must be loosened, then, after screws number 2 of the burner tray have been screwed out, it can be removed forward.



- The burner tubes removed can be cleaned, and the inside surface of the cast heat exchanger becomes accessible.

- Check the cleanness of the surfaces of the heat exchanger, and clean it if soot settlement is visible. If the layer of soil is too thick, you can use commercially available soot-removing chemicals.

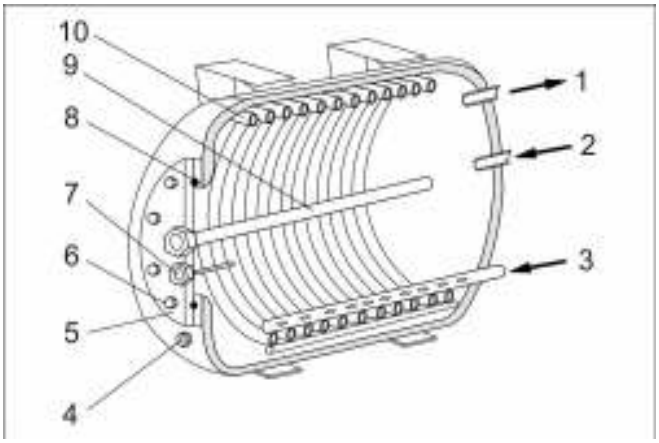
- Assembly, logically, is the reverse of the steps of disassembly.

The cleaning of GHISS B type boilers

Attention! Upon any maintenance operation, disconnect the device from the electric network!

Among appropriate circumstances of use, the boiler does not need any special attention apart from the compulsory annual maintenance operation (before the heating season).

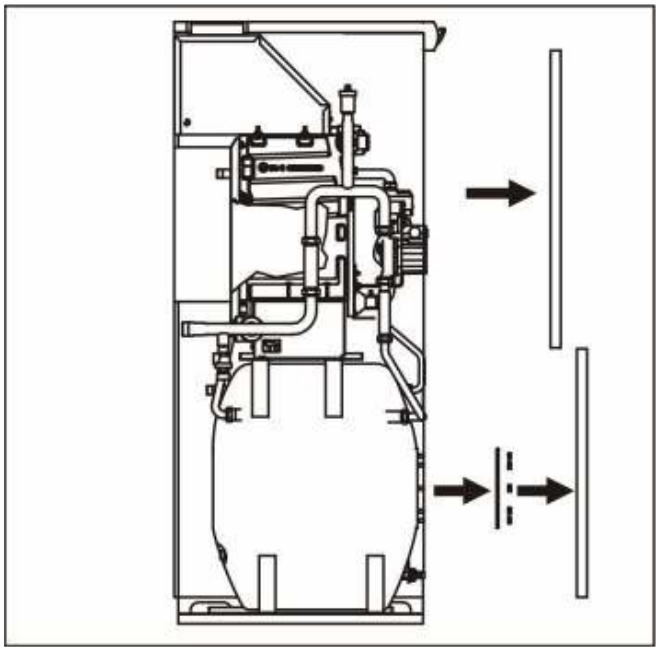
The internal cleaning of the indirect boilers is usually necessary when, after a longer period of operating time or right after the maintenance of the water network for use, more significant sediment settles in the inside of the container. Due to its sand-like nature, this sediment can be usually easily removed from the boiler in the following manner:



Drain the water contents of the boiler through the draining tap (4).

- After the removal of the bolts fastening the top, remove the closing lid of the cleaning hole (5).
- Check the condition of the anode rod and the washer ring, if need be, replace (9).
- Check the condition of the boiler filling up pipe manually, clean it mechanically during the course of self-feed rinsing (3).
- Remove the sediment with the help of the water jet applied through the cleaning hole, through the draining tap of the boiler.

After cleaning, mount the fittings in reverse order onto the structure of the boiler.



ERROR
REASON FOR ERROR
THINGS TO DO
Smell of gas can be observed
The connecting gas pipe or the gas burner leaks
Check the compositions and tighten the connections
Smell of combustion products can be observed
Smoke gas flows back, the error indicator light is on
Look for the reasons of the closure of the chimney system
Condensing water is dripping from the chimney tube
The temperature of the smoke gas is low
Check the output of the boiler, increase the temperature of the boiler set
Imperfect burning
Incorrect nozzle pressure
Check the setting
Damaged or plugged up nozzle
Check the nozzles
The burner tubes are sooty
Check the burner tubes
The ducts of the heat-exchanger are plugged up
Check the cleanness of the heat exchanger
Starts up loudly when fired up
Gas pressure insufficient
Check the setting
Ignition electrode
Check the condition and status of the electrode
The heat-exchanger is soiled frequently
Burning quality
Check the condition and settings of the burner
The boiler does not start up
There is no gas or electric feed
Check
Gas pressure is too low
Check the pressure
There is no ignition spark
Check the electrode and the electric control